STRAUB BLOCKS

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STRAUB
Cinder Building
BLOCKS

A consideration of the architectural and structural availability of Straub Blocks for the varied purposes of modern building; their nature, attributes and uses as illustrated by tests, testimony and performance, with working plans and instructions.

Price $3.50

Published by the
NATIONAL CINDER CONCRETE PRODUCTS ASSOCIATION

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Foreword

THE architect, engineer or contractor, in applying specialized knowledge to specific problems, is often confronted by the necessity for immediate and accurate information regarding the new and less academically familiar forms of building material.

Within the past ten years, the prominence given in the building field to Cinder Concrete Units manufactured under Straub Patents, and the new uses discovered almost daily for this material, have made necessary a re-arrangement and many additions to the facts regarding its nature, possibilities, and correct uses.

Whatever specific operation may be in question, the general nature of Straub Cinder Concrete Block and Tile will be found to present identical advantages to the professional man engaged in the planning and specifying of material for new structures.

However, the application of this material in varied forms of construction has brought to light so many particular functions, that this book has been arranged by classifications of industrial, commercial, institutional and residential units, with the hope of facilitating instant reference by convenient form.

Table of Contents

The Composition and Characteristics of Straub Blocks

STRAUB Patented Cinder Concrete Building Blocks are a composition of cinders and cement, compressed and moulded into standard shapes, in standard sizes.

These building units have nothing in common with hollow construction tile or concrete blocks. The composition is patented (Francis J. Straub, U. S. Letters Patent No. 1,212,840) and in an opinion handed down by the United States Court of Appeals, declaring against an infringement, it is interesting to note the sentence 'After consideration of the proofs, we have reached the conclusion that Straub made a valuable contribution to the building art.'

This contribution includes those attributes of fire safety, sound proofing, a low coefficient of heat or cold conductivity resulting in high insulating value, and the factors of strength that have made the product acceptable by building authorities throughout the United States.

Products	Foundation and Wall Bearing Blocks, Partition Tile, Brick, Reinforced Lintels, Chimney Blocks and Floor Slab Blocks.
Costs	will vary according to local conditions, but normally the saving in finished wall construction can be figured from 25 to 40% compared to same wall dimensions in brick, and 5 to 15% compared with clay tile.
Strength	Blocks have an average crushing strength of 900 lb. per sq. in. gross area, which is equivalent to approximately 1300 lb. per sq. in., net area. The ratio of unit strength to wall strength of Straub blocks is from 57 to 76%, the highest of any known masonry.
Tests	Tests made by Underwriters' Laboratories, Inc., (see page 159 of report of tests on Straub Blocks), Bureau of Standards, U. S. Government, Columbia University, Yale University, Rutgers College, Johns Hopkins University, Lewis Institute, Pittsburgh Testing Laboratory, E. L. Cornwell & Co., Philadelphia, Pa., Detroit Testing Laboratory.
Breakage	Breakage is negligible and dumping from trucks is practiced by many plants.
Fireproof	No other masonry material possesses equal fire-resisting and fire-retardant properties.
Sound Proof	The same physical properties causing low rate of heat conductivity in Straub blocks account for sound retarding quality.

Non-conductor of Heat and Cold	Straub Block walls do not "sweat"; are rotproof and vermin-proof; no mold forms, and decorations are never injured where plaster has been applied direct to exterior walls in the severest climate. Less fuel required to heat; cooler in summer. Ideal for icehouses, large refrigerators, refrigeration plants, heating ovens, dry kilns, etc.
Stucco	The rough texture affords a perfect key for plaster and stucco. The same coefficient of expansion in base and stucco explains why stucco does not crack and spall on Straub blocks. Ideal suction and mechanical bond.
No Through Mortar Joints	The through mortar joint, which is eliminated by the use of Straub Block, conducts moisture, heat and cold through the wall. The cinder block itself is a non-conductor, not depending on the dead air spaces as do other forms of hollow masonry.
No Furring Required	Having the lowest capillarity and conductivity of any masonry, furring and lathing are not required. Stucco and plaster are applied direct to the blocks; one-third less plaster required on account of omission of scratch coat and more uniform surface.
Weight of Wall	A cubic foot of completed wall weighs less than any known masonry of equal strength.
Weight	Forty per cent lighter than standard hollow cement blocks; 60% lighter than brick, and 5% to 10% lighter than hollow clay tile.
Rapid Laying	Light weight, uniformity, convenient and small buttering surfaces compared to solid units, contribute to easy, rapid and economical wall erection. Buttering surfaces larger than clay tile, therefore, stronger and more substantial; less waste of mortar and time in laying.
Nailing	As good as wood for nailing; holding power is equal to yellow pine. Nails never rust. (See Pittsburgh Testing Laboratory report on page 167.) Wood grounds and furring can be thoroughly secured by nailing to the blocks. Pipe hangers and other supporting members can be readily secured to blocks by means of lag screws, expansion bolts, etc.
Cutting Corners	Straub blocks can be cut to size, chased and channelled for pipe and conduits without fracture.
Steel Sash	Grooves are moulded into jamb blocks to admit steel window sash. Two lintels over an opening provide this advantage without cutting or channelling.
Lintels	Reinforced lintels of cinder concrete provide all the advantages of strength, lightness, nailability and damp-proofness. For standard sizes see page 181. Specials to order.
Details, Catalogs and Data	Each plant is in position to submit details and give required information to architect or engineer. Address the nearest plant or New York office.

THE following 120 pages of this book are devoted to the visualization, in some small degree, of what has actually been accomplished during the past ten years with Straub Cinder Blocks. It will be readily understood that only a small number out of tens of thousands of buildings erected with this material can be shown.

By means of photographs and description, an attempt has been made to show the use of this product in every phase of building activity. The photographs illustrate the widely varying types of building in which the blocks have been used, while the descriptions under the photographs are of additional interest in that they reveal the national scope of the Straub Cinder Block Industry.

The pages toward the latter part of the volume are of particular interest to architects and engineers, in that they contain authoritative tests, designs and sizes of the block, illustrations of its proper use, working plans and blueprints.

The section devoted to the experiences of users is notable for the inclusion of several interesting suggestions which describe or suggest new uses for the product, and also for the fact that it contains the opinions of several municipalities and nationally known authorities.

RESIDENCES

Straub Block Units for the Residence

IN considering materials for house construction, the architect seeks constantly a more perfect adaptability, in order that the ultimate in a certain type of beauty and utility may be achieved.

In this chapter on residences, practically every architectural period is represented, because Straub Blocks have been used in a great many different ways for a great many different purposes.

The beauty of design and effect that may be created with Straub Units is primarily due to the practically infinite adaptability of the material. This allows the architect full scope for the realization of his ideas and ideals. It is a beauty of accuracy, essentially classical in spirit.

Despite the variety of the houses shown, in form and aspect, there is one quality they all possess in common. The comfort enjoyed by their occupants is on an exceptionally high plane.

No one cause alone contributes to this result. As comfort itself is multiple, so the reasons for its realization through a building material must be complex.

However, some of the contributing factors are damp-proofing, sound-proofing, and non-conducting of heat and cold. Their keynote, in every case, is a perfected insulation.

There is an enduring satisfaction, to those who plan and build, in creating, from inanimate material, an environment that gives a sense of freedom, and contributes to the art of life. In our North American climate, changing from month to month, sometimes from day to day, there is real necessity for residences that will retain an even temperature, free from outside climatic changes. In our complex and blatant civilization, the luxury of absolute privacy because of sound proof walls becomes eminently desirable.

Residence of Charles Boyer, Moorestown, N. J.
All exterior and interior walls, including foundation, built of Straub Blocks
Architect, Emile G. Perrot, Philadelphia Contractor, Wm. Congezer & Sons, Inc., Haddon Heights, N. J.

Residence of Mr. M. T. Garvin, Lancaster, Pa.
Walls of 12" Blocks
Architect, M. R. Evans Contractor, Stumpf & Son

Residence of Mr. W. D. Bryant at Detroit, Mich.
Showing Appearance of Straub Block House Unstuccoed
Architects, Dise and Ditchy
Builders, Bryant and Detwiler

A Straub Block House, Unstuccoed

THE residence shown above reveals the artistic effect it is possible to secure with Straub Blocks as facing, uncovered by Stucco or other material.

The careful arrangement of light and dark blocks gives the much desired appearance of a toned surface, and the evidence of good craftsmanship that such a wall discloses is a source of gratification to owners.

To those who have regarded Straub Blocks as an unseen factor in construction, the possibilities of their use in the manner shown is full of interest.

Residence of Col. Thomas Shelton, Algonquin Park, Norfolk, Va.
House built of 8″ Cinder Block Walls. Design for House was suggested by visit to similar one in Yorkshire, England.
Architect, Bernard B. Spigel Builders, Meridith and Tazewell

Exhibition Home, Country Club District, Kansas City, Mo.
J. C. Nichols Inv. Co., Designers, Builders and Owners

Stone and Cinder Block Residence for
Mr. George T. Bell, in Massachusetts Park, Washington, D. C.
Architect, James E. Coopee Builders, Metropolitan Construction Co.

The Period Idea Reproduced in Cinder Concrete Stuccoed

WHETHER it be the proud simplicity of the Georgian, the Columned Colonial or the Tudor with its half timber and quaint charm, there is a well defined tradition that building materials must conform to in design.

Straub Units do this. According to the effect desired, Straub Units, stuccoed or unstoccoed, follow perfectly the lines and reproduce the effects the architect desires.

The superb residences erected with this material are evidences of this fact, each in the chosen period of architect and owner.

This adaptability, inherent in a rare degree, is due largely to the fact that Straub Units are not dependent upon fixed dimensions, but can be cut to size without waste.

Beauty in tint, unlike beauty in line, is largely a question of personal preference, and, clad in the snowy white or the varied shadings and textures of stucco, or revealed as its own sturdy self, the Straub Unit Wall affords a wide scope for personal taste and for charming decorative effect.

If other materials are desired to produce given effects, they may be used readily with Straub Units.

Residence at College Heights, Allentown, Pa.
Built of Straub Blocks, Stuccoed
Architect, Jacoby and Everett, Allentown, Pa. Builder, J. H. Cassone, Allentown, Pa.

Residence of Charles M. Clarke, Sewickly, Pittsburgh, Pa.

Residence of Mr. Albert Wohlsen, Lancaster, Pa.
Walls of 12″ Blocks
Architect, M. R. Evans Builder, Herman Wohlsen

Residence of Hubert Swan, Landisville, Pa.
Foundation of 12″ and Outside Walls of 8″Straub Block
Architect, Frank J. Everett, Lancaster Builder, Wm. P. Bacher

Residence of Dr. Carl Voghlin, Washington, D. C.
Architect, Rodier & Keindsir Contractor, Carl W. Markham

Lancaster Gun Club, Lancaster, Pa.
Built by James P. Brenneman

The Model House of the Detroit News and the Original of 400 Replicas

The house shown above was designed by a committee of Detroit Architects appointed by the Michigan Chapter of the American Institute of Architects.

It was erected under the auspices of the Detroit News, as the central factor in their "Better Homes Campaign," organized by Major Charles D. Kelley, of the News' homebuilding department.

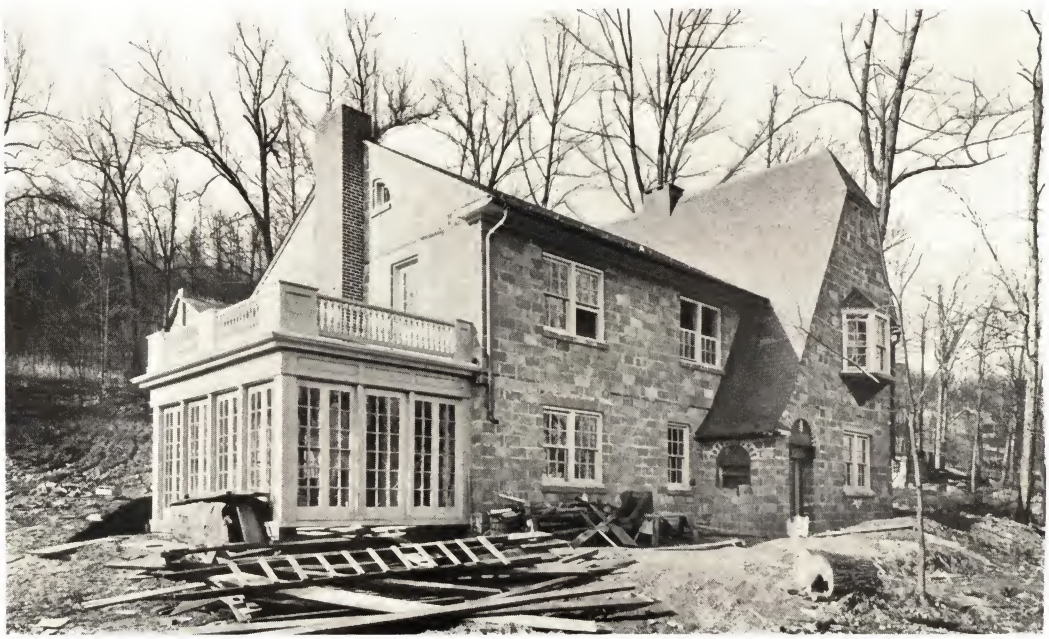
The successful bidder for the construction of the model house was required to erect at least twenty replicas for private ownership, should that many be required, at the same price as the original.

Instead of the twenty houses hoped for, the model house inspired orders for nearly four hundred houses from the public.

The half timbering and interior trim are nailed directly to the Straub Block Walls, saving considerably in cost of construction. The exterior walls, constructed entirely of Straub Blocks from foundation to roof, cost only 5% more than if built of frame.

This house is now the residence of Bert Thomas, creator of "Mr. Straphanger" and cartoonist of the Detroit News.

Completed Residence of E. P. Williams
District Sales Manager, Alpha Portland Cement Company, Easton, Pa.



Residence of E. P. Williams, under construction
See his testimonial letter, page 134

Residence of Mr. Moore, Jr., West Collingswood, N. J.
Architect and Builder, David E. Oakes

Residence of Joseph P. Breneman, Lancaster, Pa.
8″ Back-up for stone facing, with Stucco on blocks from 2nd floor to roof
Architect, C. Emlen Urban Contractor, Christian Lichty

Residence of Chas. Stroh, Harrisburg, Pa.

Outside Walls of Straub Blocks, veneered with blue limestone of different thicknesses. Three thicknesses of blocks (6″, 8″, 12″) being used to properly bond the block and stone and also to form straight walls inside. Plaster applied directly to the blocks.

Architect, Clayton J. Lappley, Harrisburg, Pa. Contractor, W. S. Miller & Son, Harrisburg, Pa.

Residence of Walter Bauers at Springfield, Ohio
Exterior walls of Straub Blocks with chimneys of cinder brick

Country Club at Springfield, Ohio

View of W. F. Schluderberg residence, Guilford, Baltimore, Md.
Constructed of Straub Cinder Building Blocks
Architect, A. C. Leach General Contractor, A. Schratke

Residence of Clyde Barrett, Rochester, N. Y.
Walls of 8" Straub Block
Architect, Leander McCord, Rochester, N. Y. Contractor, August Vondram, Webster, N. Y.

Residence at Ventnor, Atlantic City, N. J.
Built of Straub Blocks, Stuccoed

Residence of Eugene Van Voorhis, Rochester, N. Y.
Walls of Straub Blocks, Stuccoed
Architect, Leander McCord, Rochester, N. Y. Contractor, August Vondram, Webster, N. Y.

Residence of H. R. Kahle, New Kensington, Pa.
Stucco applied direct to exterior of Straub Block Walls
Architect, Enos Cooke

"The Electric Home"
Springfield, Ohio

Exterior division and foundation walls of Straub Block

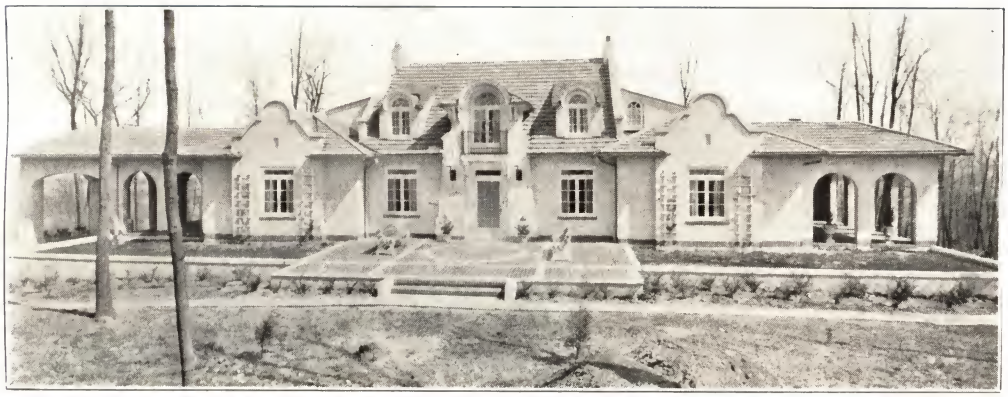
Chimney of Straub Cinder Blocks

Night View of the Electric Home, Springfield, Ohio

Latrobe Country Club
Architects, Bartholemew & Smith, Pittsburgh, Pa.

Interior view of Latrobe Country Club. The 8" Straub Block Walls are plastered direct inside, and painted direct outside.
Architects, Bartholemew & Smith, Pittsburgh, Pa.

The residences illustrated on this page are part of an operation consisting of 50 houses of different design, at Ventnor, Atlantic City, N. J. Straub Cinder Block was used for the entire operation, and the effect is most interesting as an indication of the possibilities of this material, used for an entire community.



Residence of Mr. Grove Locher, Lancaster, Pa.
8″ Straub Block Walls, Stuccoed
Builder, A. C. Sheetz, E. Petersburg, Pa.

Residence of Mr. Alfred Jones, Lancaster, Pa.
Walls of 12″ and 8″ Straub Cinder Blocks
Architect, Henry Boettcher, Lancaster, Pa.
Contractor, Herman Wohlsen

Residence of Harry Dorwart, Lancaster, Pa.
8″ Straub Block Walls, Stuccoed
Architect, Jno. B. Hannon, Lancaster, Pa.
Builder, Rudy Herr, Lancaster, Pa.

SMALL HOMES

The Problem of the Small House, and an Answer

IN the Architectural Renaissance through which America is passing, the small house has hitherto played a minor part.

The problems to be met before this condition can be changed are difficult ones. Of these difficulties, probably the most unanswerable is the usual lack of sufficient capital to build well and permanently at the prevailing high cost of material and labor, and the modernized nomad spirit that makes the house a less permanent factor in the lives of its occupants than it has ever been in the history of our civilization.

High costs, standardized houses, and the spirit of change all inter-act. The typical small house is comfortable, even equipped with luxuries. Generally it has no architecture and no meaning. Thousands of houses, with no differences in construction, equipment or furnishing, present thousands of families with no inducement to remain living in them. They can obtain practically the same house elsewhere, wherever convenience calls.

In calling the attention of the Architect to a material that is flexible to every architectural requirement, inexpensive enough in itself to lower construction costs considerably, and possessing the almost revolutionary larger unit that shortens labor time and reduces labor cost to a fraction, there is the sincere belief that undesirable modern conditions in the construction of small homes will yield to the counteracting influence of the possibilities presented by Straub Blocks.

A superior, permanently desirable, small house, conforming accurately to any architectural design, and built of Straub Blocks with the advice and assistance of an architect, for the special requirements of an owner, will cost no more than a stereotyped dwelling constructed of casual materials, put up merely to sell.

Houses at Ventnor, Atlantic City, New Jersey, built of Straub Blocks
artistically combined with other materials

Architect, S. G. Dobbins — Builders, Johnson & Johnson
Brick Mason Contractors, Unit Construction Company, Atlantic City, N. J.

Residence of James T. Cassidy, Gloucester City, N. J.
Contractor and Builder, P. A. Stewart, Gloucester City, N. J.

Residence of Mr. Herbert N. Moffett, Merchantville, N. J.
Designed and built according to Mr. Moffett's plans, by W. G. Cole, Architect

Home on State Street, Lancaster, Pa.
Walls of 8" Blocks
Architect, Henry Y. Shaub Contractor, Walter Zook

Residence on Wrightsville Pike
York, Pa.

The Home of an Architect
Residence of Paul A. Bartholomew, Greensburg, Pa
Designed and built by Mr. Bartholomew

Residence of T. P. Jamison, Greensburg, Pa.

Architect, John D. Bott Contractors, Greensburg Building Co.

Residence erected by Edward Diebert, Haddon Heights, N. J.

Residence of Mr. George L. H. Dommell, Lancaster, Pa.
Stone Work Backed up With 6" Blocks
Architect, Charles Johnson Contractor, George L. H. Dommell

Residence of Mr. Henry Y. Shaub, Lancaster, Pa.
Foundation of 12" Blocks, Stone Work backed up with block
Architect, Henry Y. Shaub Contractor, Walter Zook

Residence and Garage of Mr. William Griffiths, Haddon Heights, N. J.
Designed and Erected by Congezer & Son, Inc.

Residence of E. S. Brinkley, Norfolk, Va.
Constructed of 8″ Straub Blocks
Architect, Bernard B. Spigel Builder, C. Z. Nugent

Spanish Type Residence, Kansas City, Mo.
Architect, Miss A. E. Evans Builders, R. L. Falkenburg & Co.

Part of operation including 16 houses at Chestnut Hill, Philadelphia, Pa.
Owners, Smullen & Barry
Builders, St. Martin's Home Co., Pringle Borthwick

Residence of Mr. C. F. Humphreys, Lancaster, Pa.
Walls of 8″ Blocks
Contractor, Ivan Rohrer

Residence at York, Pa., Constructed Entirely of Straub Blocks

BUNGALOWS

Straub Block Units for Bungalows

THE bungalows scattered throughout the country attest the success with which Straub Block Units have been used in this type of structure.

Indeed, it was the bungalow that was largely responsible for the appreciation of this material shared by hundreds of builders and house owners. It was, perhaps, natural enough that a material which ten years ago was new to America should have been used and tested upon smaller construction.

In construction possibilities and in the protection afforded occupants, Straub Blocks are as ideally suited to this scale of building as they are to the larger houses referred to in Chapter 1 of this book.

Residence of Dr. Laffoon, Kansas City, Missouri
Architect, George W. Swehle

Residence of Dr. L. W. Wright, Harrisburg, Pa.
Foundations and all Outside Walls of Straub Blocks, Stuccoed. Inside Plaster Applied Direct to the Blocks
Contractor, John P. Croll, Steelton, Pa. Architect, Mr. Frank Fahenstock

Residence of E. B. Thomas, Warren, Ohio

Residence of Oscar Funk, Lancaster, Pa.
Architect, Frank Everts Contractor, A. M. Bowman

Bungalow, Collingswood, N. J.
Erected by F. C. Slocum, Contractor, Westmont, N. J.

Bungalow of Mr. Frank J. Hineline, Haddonfield, N. J.
General Contractor, Frederick Lange, Audubon, N. J. Exterior Walls of Straub Blocks

Residence of M. S. Falck, Lancaster, Pa.
Walls of 6" Blocks Veneered with Stone
Contractor, James Smith Gall

Residence at Fairview, N. J.
Builder, M. Petra

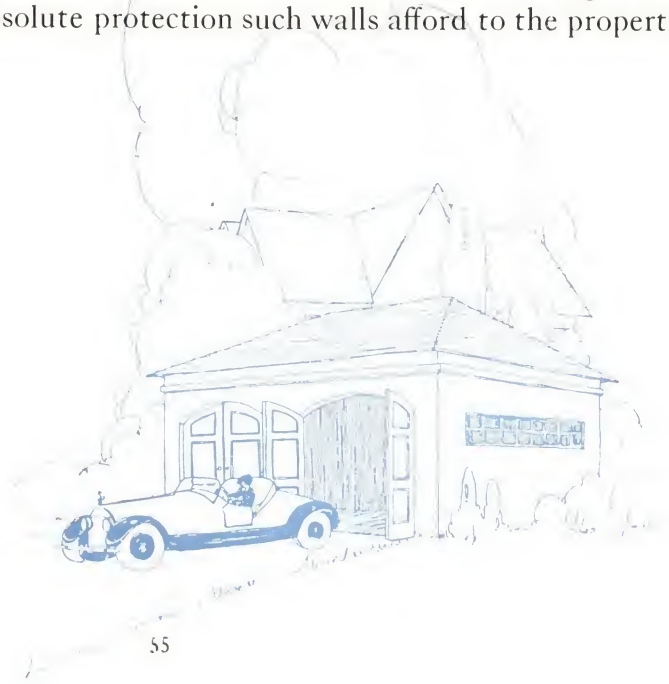
GARAGES

The Garage as an Extension of the House

WHEN the garage is built as a projection of the house, following the same general tendencies in type of architecture, and in complete accord with the larger unit, Straub Block construction adds an element of certainty to the protection of both house and garage against fire.

The highly combustible properties of automobile fuel have rendered it a very dangerous proceeding to provide quarters for both the household and the automobile at such close proximity. The use of Straub Units eliminates this danger entirely, its fire-resistant nature making possible perfect safety, low insurance rates, and the architectural unity and personal convenience such construction affords.

Commercial garages are utilizing Straub Block Units, and in many cases providing individual compartments for each car, built of 4″ Straub Block Units. The saving in cost of material and labor is as striking a fact in this relation as is the absolute protection such walls afford to the property of garage patrons.



Studebaker Distributing Agency at Norfolk, Va.
Walls and Interior Partitions of 8″ Cinder Blocks
Architect, Charles J. Cabrow **Builder, E. E. Weddle & Co.**

Jordan Motor Company's Sales and Service Station, Haddonfield, N. J.
Plant designed by Thomas Stevens, Architect, Camden, N. J.
General Contractor, James W. Draper **Brick Mason Contractor, Edwin Blizzard**

Gasoline Filling Station, Camden, N. J.
Constructed of Straub Cinder Building Blocks

Interior of Mechanical Building, Garage Section
Armstrong Cork Co., Camden, N. J.

Lawrence Garage, Size, 60′ x 227′, Reading, Pa.
Owner, Dr. Lawrence, Reading, Pa.
Contractor, Harry Freyberger
Photograph shows inside of Straub Block Walls

Exterior view of Lawrence Garage, Reading, Pa., shown above

Garage of L. H. Cooke, Springfield, Ohio

Garage at York, Pa.
Dimensions, 50′ x 90′. Constructed of Straub Blocks at a low cost

Gasoline Filling Station at Erie, Pa.
Constructed of 8″ Straub Cinder Building Blocks

Mayer's Auto Station, Rochester, N. Y.
Planned and built by the owner of 8″ Straub Blocks

Government Garage, Kansas City, Missouri
Dimensions—2 stories on rear end. Main floor, 282 ft. by 216 ft. Total floor space 65,000 sq. ft.

Government Garage, Kansas City, Missouri
Outside view. Interior of same building shown above

OPERATIONS

Walls and the House

WALL strengthening and wall decoration began with the race. Wall-insulation is a comparatively new discovery. Straub Units, while introducing a new element into the philosophy of construction, take no emphasis from the two earlier qualities.

On the contrary, the architect will find in Straub Block Units a material that, in average crushing strength, is 900 lbs. per square inch gross area (equivalent to approximately 1300 lbs. per inch net area). The ratio of unit strength to wall strength is the highest of any known masonry, ranging from 57% to 76%.

As for decorative possibilities, the Straub Unit Wall offers a surface that will take nails direct. Molding and all wood trim may be nailed direct to the wall itself. The holding power of nails driven into the Straub Block Units increases with the duration of time the nail is imbedded. Thus a 20d Old Nail driven 1½" deep into a Straub Unit, and left there for five years, required a load of 650 lbs. to draw, compared with a 300 lb. load immediately after nailing.

Leaving aside for the moment the question of saving in strips and lathing, the Straub Unit Wall reveals new possibilities, through its freedom from super-imposed materials, for artistic possibilities which have never before been afforded a medium of expression.

A new possibility, too, is afforded in speed of construction. The Straub Block Unit is lighter and larger, thus making possible a quicker finish with less labor on construction.

Economies that are impossible with other construction materials are the rule with Straub Block Units. The saving in labor, the saving in time, the elimination of breakage loss, make it possible to cut on practically every item of construction cost.

Yet these economies go hand in hand with value, and the finished operation is a source of pride, as well as of profit, to the builder.

Row of 14 houses for Merit Underwear Co., Shoemakersville, Pa.
Builder, T. J. Coyle

Row of 14 houses shown above, under construction, 36,000 Blocks used in all walls, including 8″ foundation, for this operation

Finished view of operation below
70,000 Blocks used in this operation

Operation at Reading, Pa.—From foundation to roof, this operation is constructed of Straub Blocks.
4″ Brick Veneering on front walls only.
D. F. Haupt, Designer, Builder and owner

16 Houses in Chestnut Hill, Philadelphia, Pa.
Built of Straub Cinder Building Blocks
Owners, Smullen & Barry

Another view of the Smullen & Barry Operation at Chestnut Hill
Over 100,000 Straub Blocks used in this operation

Operation at Reading, Pa.
168 residences were erected during 1924 by Mr. Sherman, in which 320,000 Straub Blocks were used from foundations to roof

Finished View of Operation Shown Above
Straub Cinder Building Blocks used with stone facing on foundation walls
Architect, H. G. Mohn **Builder, Samuel M. Sherman**

Terrace of 8 Residences at Englewood, N. J.
Walls of 8″ Straub Blocks. Plastered and Stuccoed Direct—No Furring
Architects, Hayes & Hoadley Builder, R. H. Mackenzie

8 Family Apartments at Rochester, N. Y.
Owner and Builder, Joseph Lockhart
Constructed of Straub Blocks, Stuccoed

Terrace of Ten Houses at Edgewater, N. J.
10,000 Straub Blocks were used in this operation. All party walls from cellar to roof constructed of 8″ blocks
Owner, David Rubin
Contractor, A. H. Lueders, Grantwood, N. J.

Beginning of large operation, dwelling houses at Camden, N. J.
Owner and Builder, John Maginnis, Camden, N. J.

Residence Operation in Springfield, Ohio
Exterior Walls of Straub Blocks, Chimneys of Cinder Brick, Lintels of Cinder Concrete

THE WIDENING SEASONS

WHERE time is a factor, as it generally is with large operations, the ability to shorten by weeks the duration of building takes on an importance hard to exaggerate.

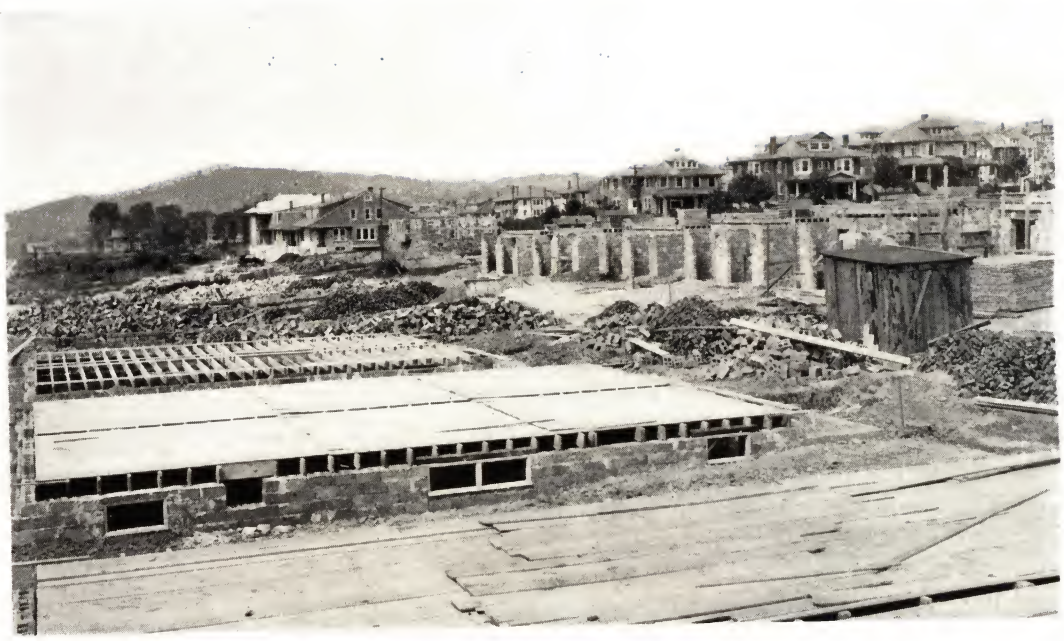
Nor is this feature confined to cost alone. The possibilities of starting work late in the Autumn and finishing before the snow flies give a greater liberty of action and actually increase the duration of the building season.

This latter fact seems highly significant, since it limits more definitely the curtailment of seasonal building activity, and brings the periods of building activity closer together across a narrowed winter.

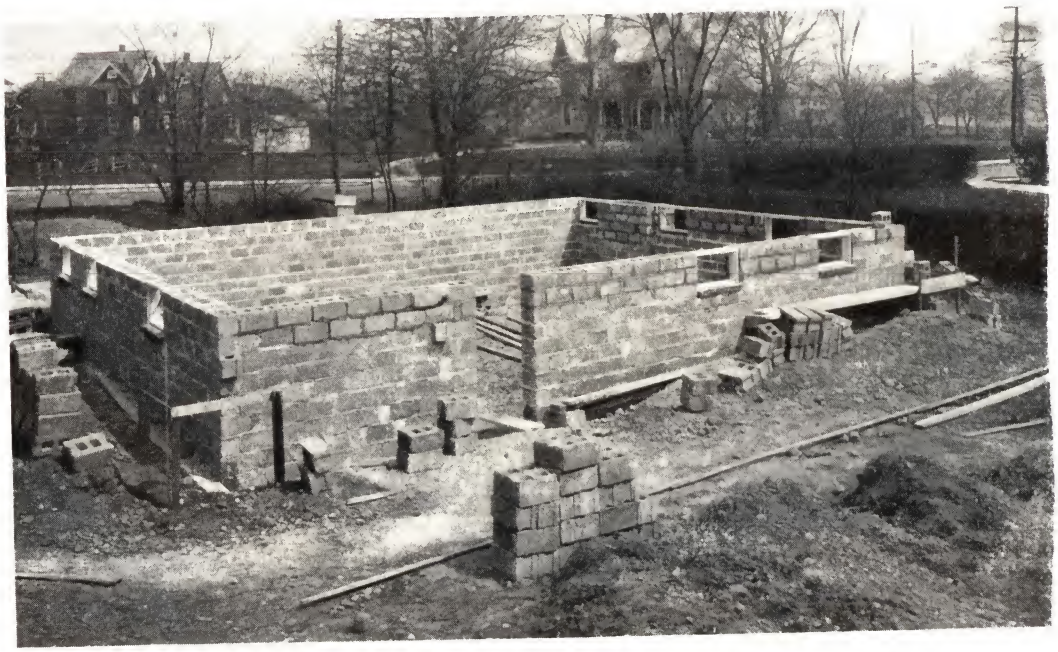
Residence Operation of George D. Bacon, York, Pa.
All Walls Constructed of Straub Cinder Building Blocks

Residence forming part of Indian Creek Development, Overbrook, Philadelphia
W. W. Potter, Architect and Owner

Residences on Dauphin Street, Lancaster, Pa.
Walls of 8″ Blocks
Architect, Henry Y. Shaub Contractor, Wm. Bentz



Foundation for Hampton Heights Development Co.
Builder, Samuel M. Sherman, Reading, Pa.
This entire operation comprises 72 houses, all constructed of Straub Blocks



Straub Block Foundation for the Residence of Mrs. M. Phillips, Englewood, N. J.
Architect and Contractor, Charles H. Grasing, Englewood, N. J. Mason, Louis Argonica

Foundation for Residence of Mr. Alfred Jones, Lancaster, Pa.

A Foundation that adds a New Floor

THE old word "cellar", so nearly obsolete in America, soon bids fair to be not merely unspoken, but non-existent.

Straub Block Units take what was once conceived as a damp, chilly and unlivable place, used only for storing, and make it dry, comfortable and livable. Foundations of Straub Units add a new floor to the house.

The architectural plan is changing already in conformity with this new possibility. The room that had to be given up because of lack of space, the billiard room, or smoking room, or dream room of any sort that was forced out of the plan some years ago, finds a place in the new cellar-less home today.

Dry walls, dry floor, healthful atmosphere, all are made possible by the use of Straub Block Units for foundation walls. Not only are these conditions made possible, but they are rendered permanent. Year after year a basement flanked with Straub Units remains suitable for habitation, a new floor in the house.

SCHOOLS & CHURCHES

Physical Environment as a Vital Factor

PHYSICAL environment is as vital a factor in the school as in the home. A school that is not fireproof is a potential crime against the community in which it is located. A school that is full of distractions and outside noises is a serious drawback to the present knowledge and future opportunity of its pupils. A school subject to sudden temperature changes is a menace to health.

To the modern ideal of what a school should be, Straub Blocks have contributed the physical means of realization. This material is fireproof, sound proof, and heat or cold proof. The health, comfort and safety of students are insured by walls of Straub Block.

A single building material, combining in itself all of these qualities, is invaluable for construction work of this nature. Yet Straub Blocks are low in first cost, and their use makes possible a saving in labor amounting to many thousands of dollars.

Those who build churches, and those who pay for their building, desire to incorporate into the physical structure that permanence of character which symbolizes the eternal nature of their spiritual mission.

Churches are built to endure. The planning, the building, and the materials used for churches must be worthy beyond question.

In this type of construction, the sterling worth of Straub Blocks, no less than their almost infinite adaptability to varying building requirements, assures them a consideration based on proven endurance and permanent value.

Wm. Penn High School, Harrisburg, Pa.
Inside load bearing walls constructed of Straub Blocks
Architect, C. Howard Lloyd, Telegraph Building, Harrisburg, Pa.
Contractor, W. S. Shoemaker & Son, Harrisburg, Pa.

High School at Palmerton, Pa.
Back-up and all Interior Walls of Straub Cinder Blocks
Architect, Mr. William H. Lee, Philadelphia, Pa.

First Church of Christ Scientist, Springfield, Ohio

Architect, S. S. Beman, Chicago

Superstructure cream face brick veneer, backed up with Straub Cinder Block. Interior plaster applied direct to face of block. This church enjoys the lowest fire insurance rate of any church in Springfield.

School at North Arlington, N. J.

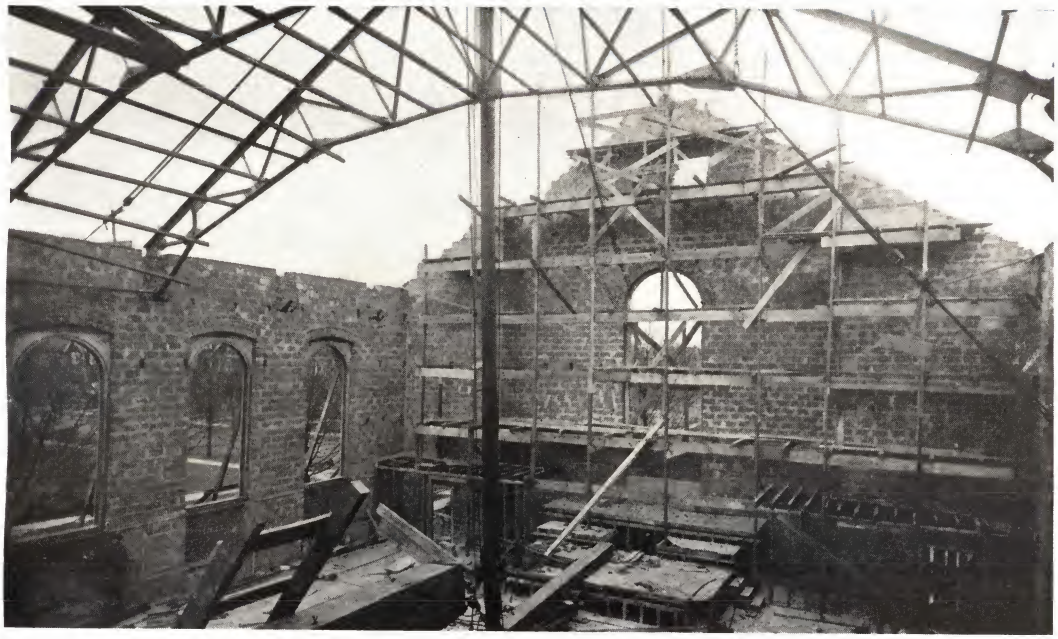
Inside and outside walls of Straub Block, outside walls veneered

Architect, J. F. Osborne, North Arlington, N. J. **Contractor, F. and C. Haerter Co., West New York, N. J.**

Public School, Rochelle Park, N. J.
Architect, Ralph Evans Hacker, Palisade, N. J. General Contractor, Faber Construction Co., Hackensack, N. J.
Basement Walls of 12″ Straub Block. Outer Walls of 8″ Straub Block on Brick Veneer

Grade School addition, Upper Ridgewood, N. J.

12,000 Straub Blocks used, all partitions and walls being of this material. It is interesting to note that the cubic contents of the addition, built of Straub Block, are four times that of the original clay tile building, yet the coal used during the first winter in which the addition was in use totaled only twice the amount of fuel required to heat the original building.

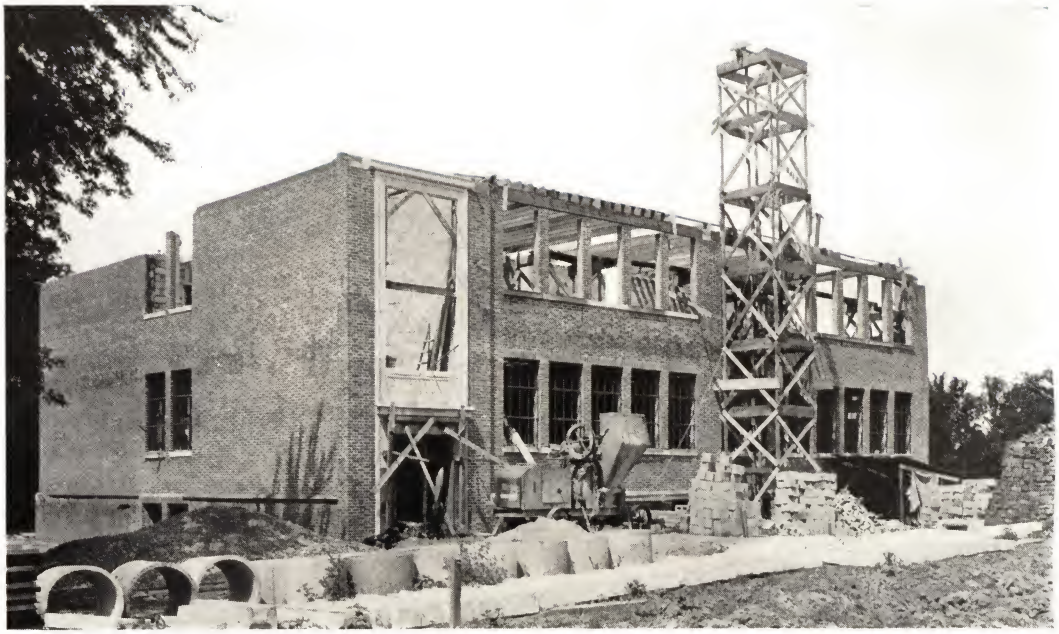


Interior view of First M. E. Church, Haddon Heights, N. J., in course of construction
Architects, Simon & Simon, Philadelphia General Contractors, F. V. Warren & Co., Philadelphia

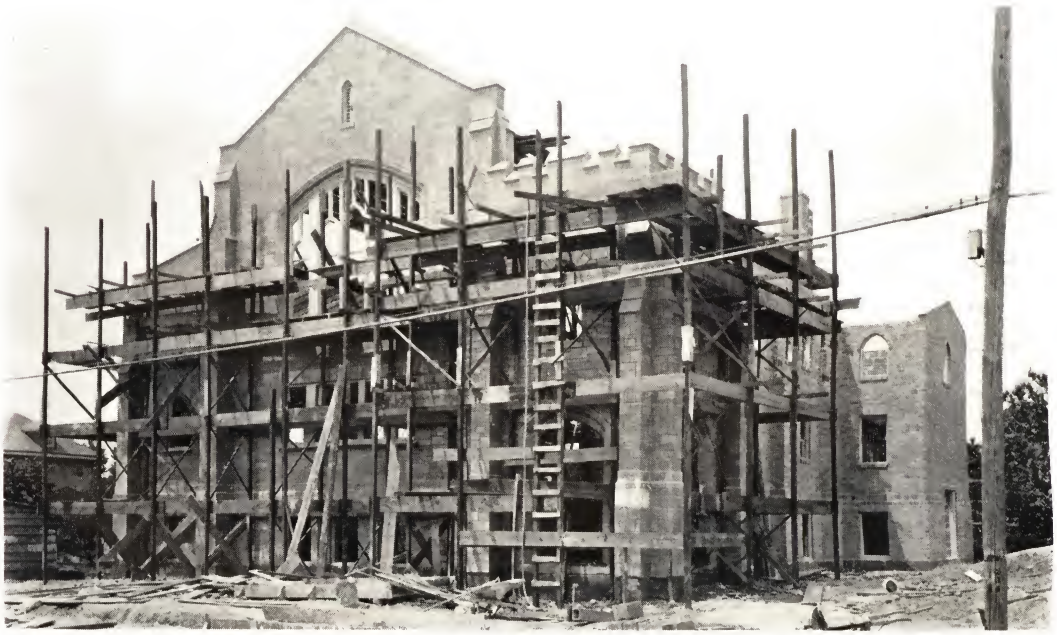
Upper Ridgewood School, Ridgewood, N. J.

View of Auditorium. The bearing walls illustrated, 12 inches in thickness, carry the proscenium arch and roof load. These walls, as well as all exterior and partition walls in the school building, are of Straub Cinder Blocks. 13,000 blocks used in operation.

Architect, Chas Granville Jones Contractors, Federal Building Corporation



J. Fithian Tatem School, Camden, N. J.



Collingswood Lutheran Church
Park Avenue and Dill Street, Collingswood, N. J.
Brick and Stone. Exterior backed up with 8″ block, interior part of 8″ block.
Architect, George T. Baum, 1511 Arch St., Philadelphia
General Contractor, E. J. Kreitzburg, 1333 Arch St., Philadelphia

Brooklawn School, Camden, N. J.

Outside walls constructed of 12″ and 8″ Straub Cinder Blocks, veneered with 4″ of brick. All partition walls of 8″ Straub Cinder Block.

Architect, A. J. Voegtlin, Camden, N. J. Contractor, John L. Coneys, Philadelphia

Interior of Rutherford, N. J., Congregational Church

Duncannon School, Duncannon, Pa.
Outside walls constructed of Straub Blocks veneered with 4 inches of clay brick. Inside load-bearing walls of Straub Block. Plaster applied direct.
Architect, Lawrie & Green, Harrisburg, Pa. Contractor, H. W. Holtzman, Millersburg, Pa.

Foundations for High School, Glen Ridge, N. J.
30,000 Straub Blocks for interior walls and back-up. 8" Straub Block bearing walls were used throughout the interior
Architect, Frank C. Goodwillie, New York City Contractor, Mark C. Fredennick

Centralized School Building, Neffsville, Pa.
Walls constructed of 8″ Cinder Blocks veneered with 4″ of brick
Architect, Henry Y. Schaub

Christian Science Church, Lancaster, Pa.

Mickle School, Camden, N. J.

8″ Straub Block have been used for back-up throughout, with 12″ and 4″ Straub Block and Cinder Brick for inside partitions.

Architects, Edwards & Green, Camden, N. J.

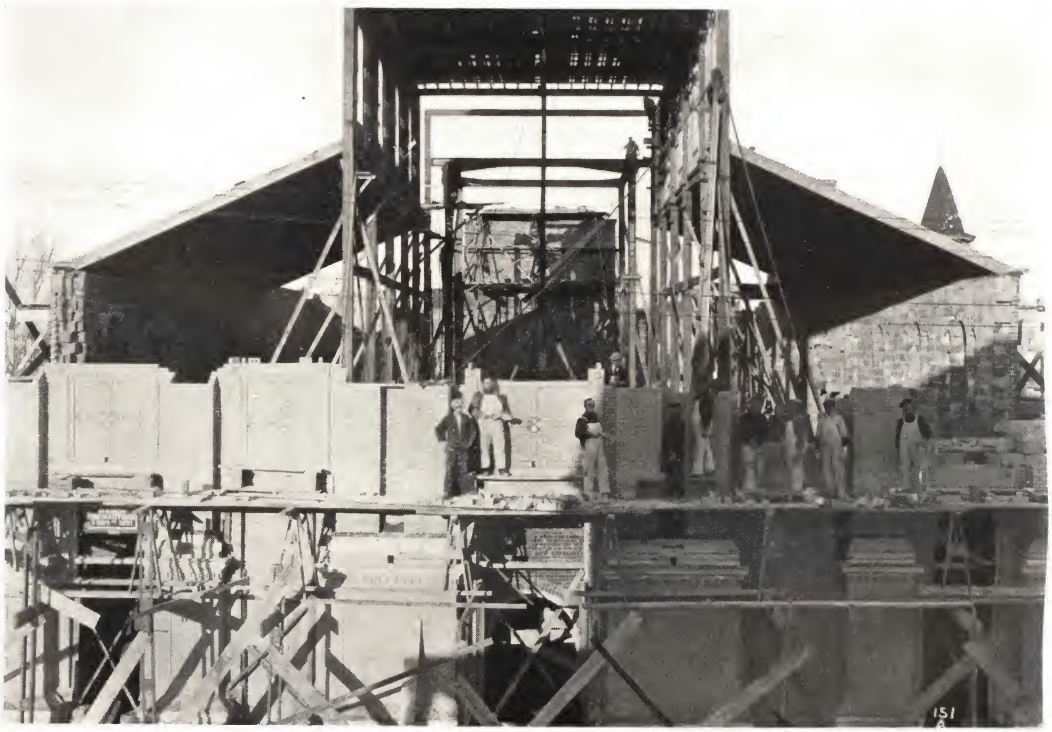
Westport Junior High School, Kansas City, Missouri

5 stories. Straub Block back-up

Grade School Addition, Upper Ridgewood, N. J.
Architect, Chas. Granville Jones, New York City Contractors, Federal Construction Company, Newark, N. J.

Catholic School in course of construction at Allentown, Pa.
Straub Blocks used for back-up and partition walls
Builders, Wm. H. Gangewere & Co.

Rutherford Congregational Church, Rutherford, N. J.
Architect, Dudley S. Van Antwerp Contractor, Dansen Construction Company, Lodi, N. J.
12,000 Straub Blocks—12″, 8″, and 4″, used in operation
Note details of Arches and Oriel Windows for adaptability of units. Concentrated loads on both Monolithic and Straub Block Piers. The Walls to be Stuccoed and Plastered direct without furring



View of the Mount Virgin Roman Catholic Church, in process of erection at Garfield, N. J. Exterior Walls varying from two feet to twelve inches of Straub Block, with four-inch brick veneer. Interior partitions throughout of Straub Block.
Architect, John J. Baldino, Garfield, N. J. Mason Contractors, Pinto & Perraggnia

View of Straub Block Partition Walls in Palmerton School

Another view of High School at Palmerton, Pa.
Architect, Mr. William H. Lee, Philadelphia, Pa.

Christ Lutheran Church, Harrisburg, Pa.

The outside walls of the church are constructed of Straub Blocks veneered with blue limestone of varying sizes. To properly bond the block and stone and to form straight walls inside and outside, 6″ 8″ and 12″ blocks were used. The inside plaster was applied direct to the block.

Architect, Ritcher & Eiler, Reading, Pa. **Supervising Architect, W. W. Witman, Harrisburg, Pa.**

Contractor, Charles W. Strayer, Harrisburg, Pa.

St. Peter's School, Steelton, Pa.

Outside walls are of Straub Blocks veneered with four inches of clay brick. Straub Block used for inside load bearing walls. Inside plaster applied directly to blocks of outside walls.

Architect, Johnson & Starr, Harrisburg, Pa.

Contractor, John P. Croll, Steelton, Pa.

INSTITUTIONS

Straub Block Units for Institutions

NOTWITHSTANDING that collective institutions have their special purposes and their particular needs, and with due consideration of the fact that a hospital is laid out upon a plan different from that used for a bungalow, the vital difference in the purpose of any institution, as contrasted with any residence, is quantitative.

The one is built for many, the other for few. The advantages of one are exclusive; of the other inclusive. A building construction that minimizes annoyance on a small scale for one, minimizes it on a large scale for the other, and a relatively large saving in construction with the bungalow becomes a tremendous saving with the hospital.

Straub Block Units are equally appropriate for large and small building operations, but in the large operation the saving in cost is of vital importance.

The Taxpayers, the Private Donors and the Board of Directors

WHETHER the contributing sources are many or few, the institution, whether it be school or hospital, club or hotel, or place of public gathering, must satisfy these imperative requirements; it must be permanent, it must possess dignity and it must be economical.

The permanence and dignity are of equal importance to trustees and architects. An institution is a monument to the men who designed and founded it.

The economy, also, is of importance to everyone, but is the architects' direct responsibility, for many can pass upon a finished building but few are able to assign what its cost should be.

Straub Block Units work with the architect and engineer in effecting big economies. The greater part, perhaps, is the utter elimination of unnecessary and avoidable expense.

For Straub Block Units are low in material cost, first of all. They start with economy. Then the breakage loss is practically eliminated. On this point the Underwriters' Laboratories Report comments: "In a half carload shipment of the blocks from Pennsylvania to a Chicago freight house and thence by truck to the Laboratories, the amount of damage to the block was negligible."

The labor cost, always an item of primary concern, is put upon a sound basis. Since an 8″ x 8″ x 16″ block unit, weighing only 32 pounds, is equivalent in cubic volume to 12 common brick weighing 72 pounds, the light, well balanced Straub Units are erected more speedily, and the cutting of man hours is a matter for mathematical computation.

Addition to St. Joseph's Hospital, Lancaster, Pa.
Back-up and Inside Walls of Straub Blocks

Interior view of addition to St. Joseph's Hospital, Lancaster, Pa.
Corridor bearing walls constructed of 12″ Blocks and face brick work backed up with 8″ Blocks

Oddfellows Home of Pennsylvania, Middletown, Pa.
Straub Blocks with brick veneer.
Architect, Wm. H. Lee, Philadelphia

Widows' Home Lebanon, Pa.
Outside walls constructed of Straub Blocks veneered with four inches of clay brick. Inside load bearing walls of Straub Blocks.
Architects, Bissell & Sinkler, Philadelphia, Pa. Contractor, Rapp Construction Co., Lebanon, Pa.

St. Joseph's Hospital, at Teaneck, N. J.

Shown under process of construction. The exterior walls are of 8″ Straub Cinder Block, veneered with brick.

Architect, Jose Consiglio **General Contractors, Whyte Construction Company**

View of interior partitions of Straub Cinder Blocks

Alsace Township School,
Reading, Pa.
In course of Construction

All exterior and interior walls,
including foundations,
built of Straub Cinder Blocks

Architects, Scholl & Richardson,
Reading, Pa.

Front view of the Alsace Township School

Rear Wall of the School
177 feet long

HOTELS & THEATERS
BANKS · APARTMENTS · CLUBS

The Significance of Larger Building Units in the New Architecture

ALMOST it seems that commercial building has borrowed a caption from the style announcements. "The fashionable silhouette is changing." And with the change to the new zoned building comes another conception new as Babylon, but beautiful, with the justice of balanced masses and the beauty of fitness.

Into this design of superb, turreted buildings is fitted the detail of Straub Block Units, completing, rounding out, adding the beauty of perfect efficiency to the beauty of aesthetic massing.

The sweep of open spaces between buildings, destined to become more pronounced with the new architecture, will expose more of the building to the action of temperature. Straub Units, with their impervious surfaces locked against the effect of dampness and weather and wind blown cold, will save fuel bills aggregating tremendous sums yearly for the owners of buildings, and provide for the busy office fold within an environment scientifically adapted to the construction requirements of correct living.

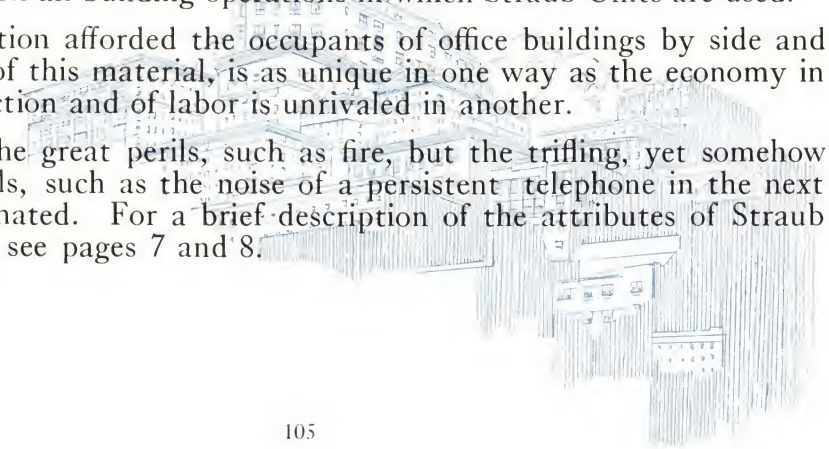
Among the important features made available by Straub Block Construction, possibly the most unusual in its happy possibilities is the Larger Building Unit.

The significance of the Larger Building Unit for all construction work, and its vital importance in large undertakings, lies primarily in the superior standard established for speed of construction, and secondarily in the economy of mortar and other materials made possible by more fortunate dimensions.

In particular, the economy in time of construction, setting, as it does, new records in progress of erection and in labor saving, carries the efficiency work of Gilbreth a long step ahead and shortens the time between conception and realization on all building operations in which Straub Units are used.

The protection afforded the occupants of office buildings by side and partition walls of this material, is as unique in one way as the economy in time of construction and of labor is unrivaled in another.

Not only the great perils, such as fire, but the trifling, yet somehow important details, such as the noise of a persistent telephone in the next office, are eliminated. For a brief description of the attributes of Straub Building Units, see pages 7 and 8.



View of floor and ceiling construction used in the Walt Whitman Hotel, Camden, N. J. after removal of forms.

Note the uniformity of cinder blocks in the foreground.

(See letter from Mr. George P. Quigley, Superintendent of Construction, on page 135.)

Another view of floor construction showing ceiling ready for plaster.
Note uniformity of surface afforded by Cinder Blocks.

Walt Whitman Hotel, Camden, N. J.
Straub Cinder Blocks used to back 4″ of face brick and for floor construction.
Architects, Engineers and Contractors—H. L. Stevens & Co., New York City.

Interior view of exterior wall showing 8″ Cinder Block used to back-up 4″ of brick.

Palisades Apartments, Rochester, N. Y.
Straub Cinder Blocks used in floors and roof. Jos. Joroslow, owner, Juppa Battle Co., Inc. Contractors.

Felix Theatre and Office Building, Kansas City, Missouri
Built by the Fogel Construction Co. Harry Drake, Architect.
Walls of Straub Cinder Building Blocks

Granada Apartments, Norfolk, Virginia
Constructed of 8″ and 12″ Cinder Block Walls, with 4″ brick veneer
Architect, Philip C. Moser Builder, C. C. Pierce Masonry Contractors, Cahoon & Hudgins

Apartments at Rochester, N. Y.
Walls and Basement of 12″ Straub Blocks
Contractor, Juppa Battle Co., Inc.

Two 8-family apartments, Rochester, N. Y.
Owner and Builder, James Lockhart, Rochester, N. Y.

3 story apartments at Kansas City, Missouri
Owner, C. O. Jones
Architect, Miss Nell E. Peters

Colby Park Apartments, Rochester, N. Y.
Owner, L. L. Berman
Contractors, M. Juppa and E. Maggio
A fifty family apartment, backed with Straub Blocks

Lancaster Gun Club
Built by Jas. P. Brenneman
8" Straub Block Walls, Stuccoed

Haddonfield Trust Company, Haddonfield, N. J.
Under construction. Outside walls of 8″ Straub Blocks veneered with 4″ of brick. Partition walls of 8″ Straub Blocks.
Contractors, F. W. Warren Co.

4 Story Apartment, Kansas City, Missouri
Architect, Miss Nell E. Peters Contractors, Phillips Building Co.

Sheffield Apartments, Harrisburg, Pa.
The outside walls of these apartments are of Straub Blocks veneered with four inches of brick. Inside plaster is applied directly to the block.
Contractor, George E. Sheffer, Camp Hill, Pa.

Washington Apartments and adjoining stores and offices, Tenafly, N. J. Franklin L. Groff, Owner
Peter Pasquale, Mason Contractor. Apartment walls 5″ veneer of Straub Blocks over frame. Alteration job
Stores and offices 12″ and 8″ Straub Blocks. These walls stopped the Tenafly conflagration.
See pages 136 and 153.

Fexlix Theatre, Kansas City, Missouri
Architect, Harry Drake Builders, Fogel Construction Co.

Eight Hours a Day—In Ideal Surroundings

A large proportion of our urban population spend the most important part of their days in an office. To make that office a place worthy of so much time passed, and so much effort given, is surely justifiable, and indeed imperative.

The most essential part of these, or of any other, surroundings, is not those things that may be seen. The surrounding atmosphere, that may be too hot or too cold or too damp, that may be filled with waves of noise that distract and irritate, is one element in office life that has a remarkable influence on both quantity and quality of work.

How often do we hear—"I can't work, it's too hot" or "I can't work, it's too cold" or "I think this is the noisiest office in town."

Side and partition walls built of Straub Block Units eliminate such annoyances. The cellular construction of Straub Units form a mass of air pockets and reduce sound transmission to a minimum.

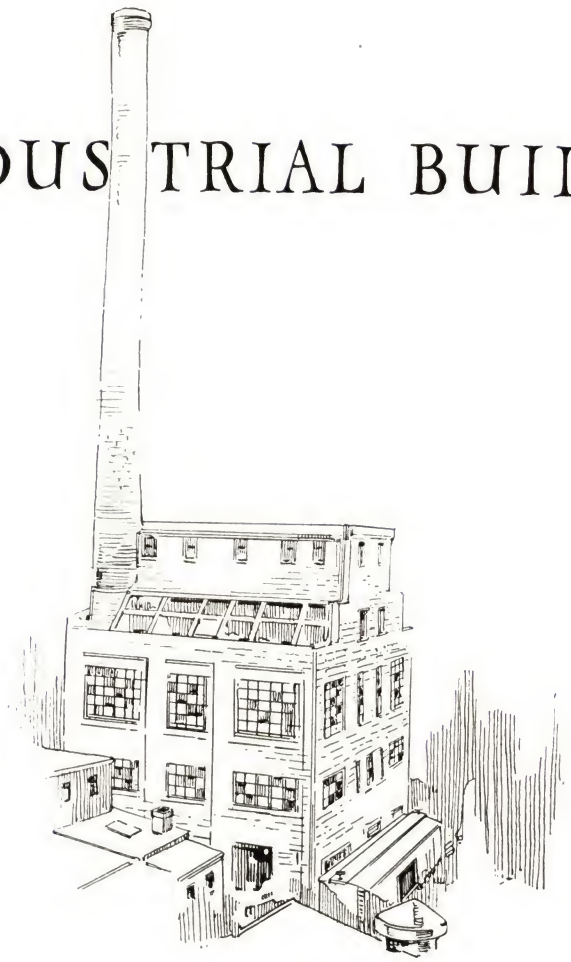
The same insulating feature neutralizes the atmospheric changes outside. The sudden cool day is not chilly in an office walled with Straub Units. The sudden hot day is comfortable. When someone works overtime and the heat is shut off, there is no aftermath of colds or illness.

These invisible advantages are so tremendously real that many commercial enterprises have realized from them an increase in comfort, efficiency and the general tone of their entire office force.

The factor of fire safety, proven repeatedly by exhaustive tests, adds to a building the luxury of absolute security.

The architect and owner can realize these benefits for the tenants in any office building, at a probable saving in material, a definite saving in labor, and in many cities a lower insurance rate, by specifying walls of Straub Building Units.

INDUSTRIAL BUILDINGS



Straub Blocks for Industrial Buildings

EVER since the Industrial Revolution created the factory, it has been the engineer's problem to give that utilitarian and grimy institution a fineness of form and a convenience of detail that would result in an aesthetic justification of its existence.

His problem, also, to bring to the workers in factories a better environment and to the management of factories a greater efficiency.

It has been made possible within the last ten years to practically eliminate two of the most repellant former factory characteristics—heat and noise, by segregation.

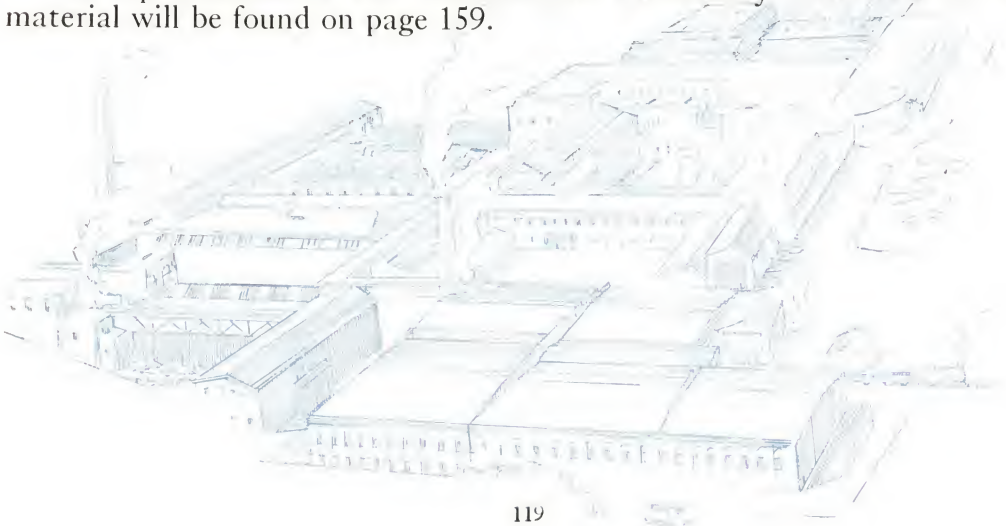
Straub Building Units make this segregation practical, logical and inexpensive. The engine room, the blast furnaces, the places of intense heat inside are partitioned off from every other department by walls of heatproof Straub Block Units. The intense heat of summer in the outside atmosphere is kept outside, too, by Straub Walls, and the efficiency of employees is raised proportionately.

The maddening tap of riveting machines, the clang of metal against metal, crash and roar and barbarous din of the factory life of yesterday—all are banished by sound-proof Straub Block Units. Possible now to have concentrated effort in an unshaken atmosphere.

The brighter walls that science has proved essential to the dissemination of light rays are becoming standard in all new or remodelled plants. The natural texture of Straub Block Units affords an ideal surface for the application of whiting or paint, which will not peel or scale.

The fireproof quality of Straub Units is so well established that it is unnecessary to dwell upon this factor for plant construction. A fact not so well known, however, is that Straub Blocks that have been through fires have frequently been used by owners for rebuilding purposes. Fire not only is defeated by the use of these units, but has practically no effect upon them. The cracking so common in other material is unknown in Straub Units.

A reproduction of the Underwriters Laboratory Fire Test on this material will be found on page 159.



Thawing Plant of Reading Co., Coal Piers, Port Richmond, Pa.

A New Outlook in Factory Construction

NEW possibilities have been revealed to architects and to builders engaged in plant construction by Straub Block Units. New tools have been given them toward the perfecting of that old architectural ideal, the adapting of more perfect means toward the realization of a long visioned end.

The scientific possibilities available for utilization in Straub Block Units have already effected changes in plant construction. The Philadelphia & Reading Railroad, the Campbell Soup Company, the Wellsbach Co., the Pittsburgh Plate Glass Co., the Armstrong Cork Co., and hundreds of others have used this material in their plants

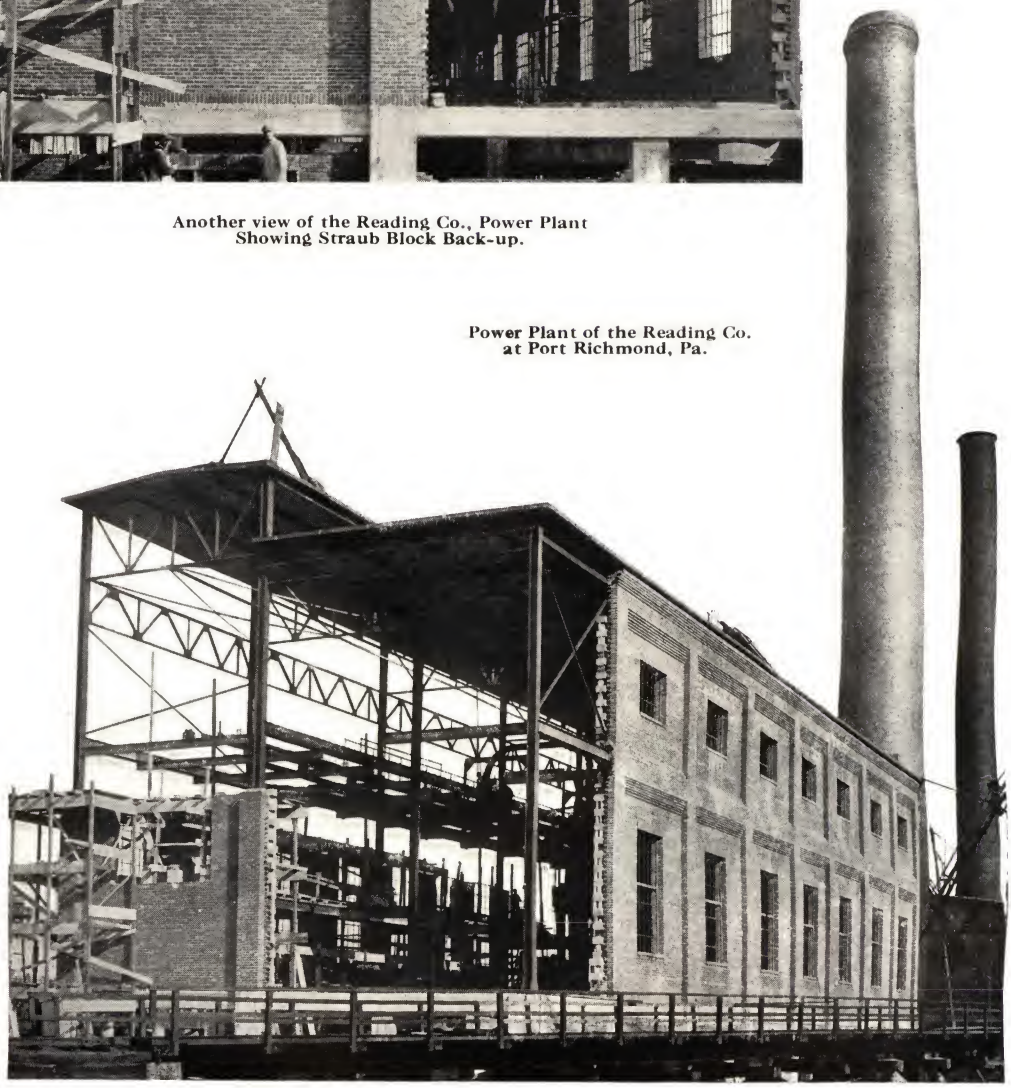
But the significance of complete insulation in a building material, the importance of the larger unit (mentioned in the chapter on office buildings, page 105), the combinations and creative possibilities in this most scientifically constructed material, are capable of practical application on a scale calculated to introduce a new era in plant construction. By changing the physical surroundings of men, and actually creating another and superior environment, the industrial aspect of architecture and life takes on a different meaning.

The minds of architect and industrial engineer, working on specific problems, can introduce this new era in industrial architecture and efficiency through the medium of this provably superior material whose possibilities are even yet not fully realized.

Boiler Room of the Campbell Soup Co., Camden, N. J.
8″ Straub Block Fire Wall specified by the Campbell Soup Co. to prevent heat from penetrating to other parts of plant

Another view of the Reading Co., Power Plant
Showing Straub Block Back-up.

Power Plant of the Reading Co.
at Port Richmond, Pa.

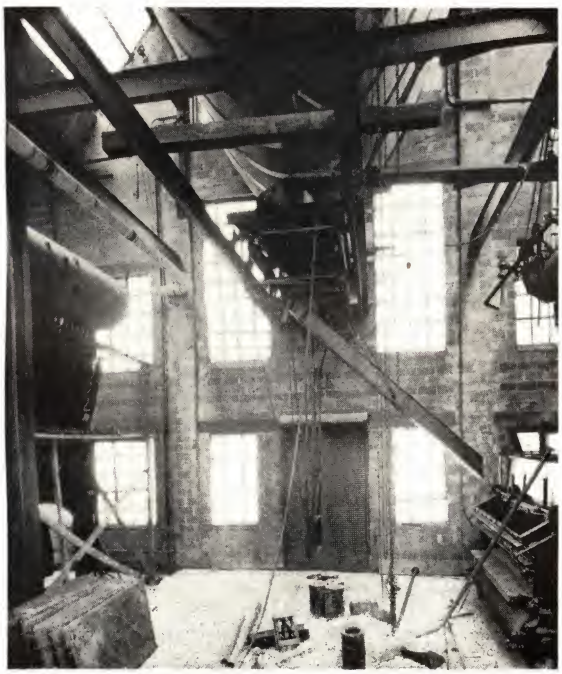


Club House of the United States Aluminum Co.
at New Kensington, Pa.

Office and Warehouse of the Loose-Wiles Biscuit Co., Rochester, N. Y.
Foundation of 12″—Walls of 8″ Straub Blocks
Contractor, Juppa-Battle Co., Inc., Rochester, N. Y.

Plant of the United States
Aluminum Company
New Kensington Pennsylvania

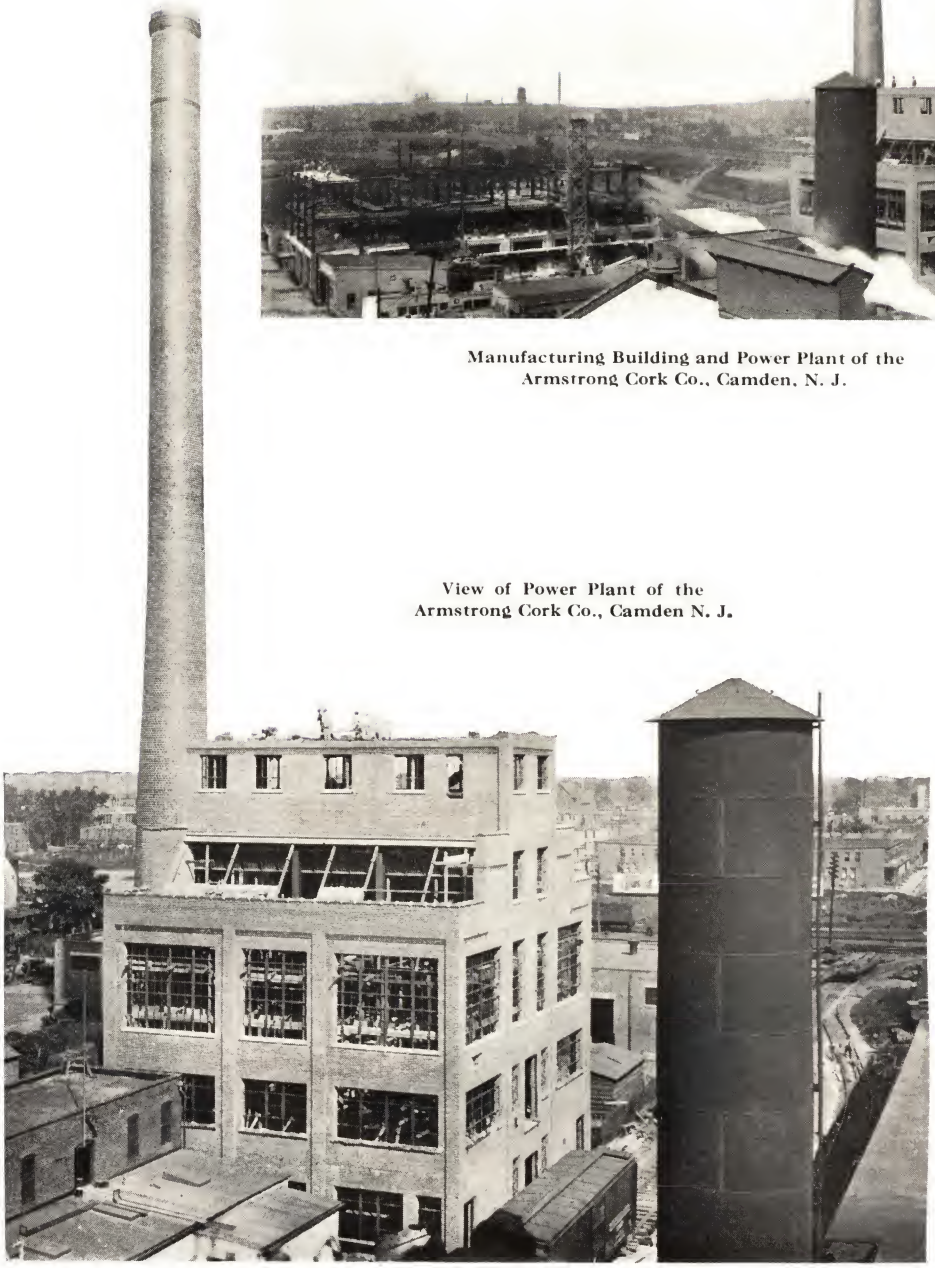
Plant of Armstrong Cork Co. Linoleum Division, Lancaster, Pa.



Interior of Power Plant—Armstrong Cork Co., Camden, N. J.

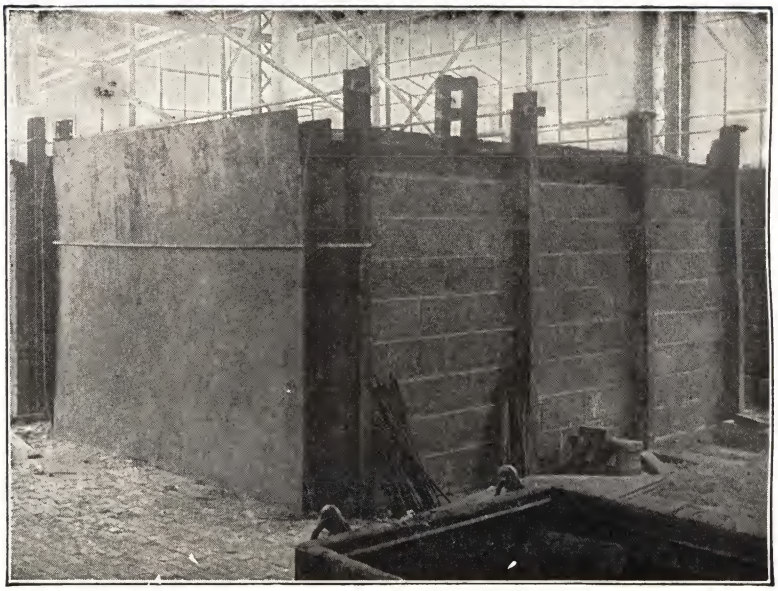
Manufacturing Building and Power Plant of the
Armstrong Cork Co., Camden, N. J.

View of Power Plant of the
Armstrong Cork Co., Camden N. J.

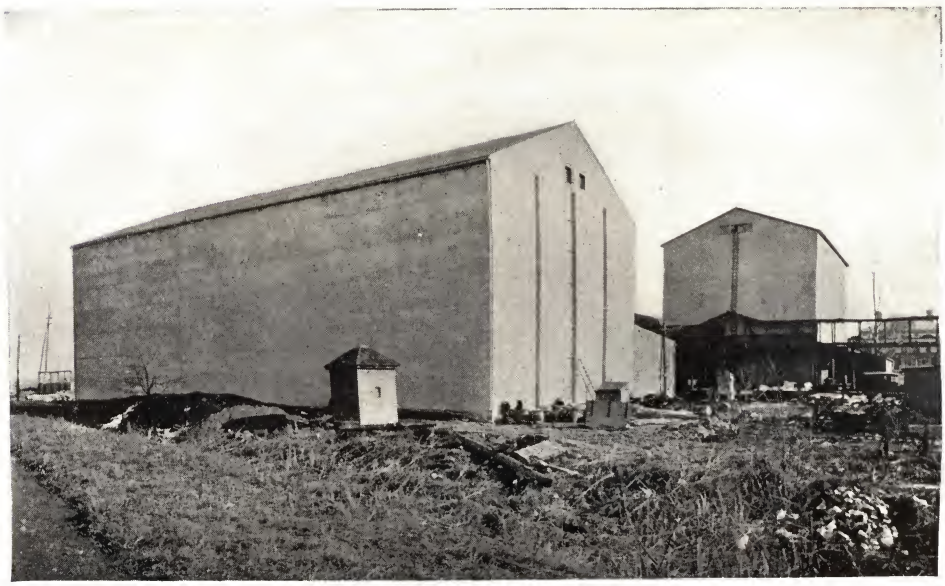


Offices of the Armstrong Cork Co.
Linoleum Division, Lancaster, Pa.

Interior of Manufacturing Building
Armstrong Cork Co., Camden, N. J.



Retaining Heat—Heating oven at the Braeburn Steel Company, Braeburn, Pa.
The oven is built of 8 x 8 x 16 inch blocks and the gas flames play directly against the naked block
Interior heat 450°F., exterior walls only warm to the hand, because of the insulating quality of the blocks



Completed Ice House of the Consumer's Ice Company, Lancaster, Pa.
Built of steel frame and Straub Cinder Block

Remington and Vosbury Office Building, Camden, N. J.
Architect, Lackey & Hettel **Construction Engineer, Carl Zuch**

THE quality of thought in the occupants of office buildings is clarified by healthful, even temperatures and the elimination of outside disturbances. Straub Blocks are insulated against heat, cold and sound.

Experiences

The testimony of Municipalities, architects, engineers and individuals who have used or investigated Straub Cinder Building Blocks.

The following names are represented in this chapter:

CITY OF PITTSBURGH,
Chief Engineer.

CITY OF POTTSVILLE

CITY OF PLAINFIELD

CITY OF ELMIRA

FOGEL CONSTRUCTION CO.

HARRY R. MILLER, Builder

VICTOR GONDOS, Engineer

UNITED STATES ALUMINUM CO.

COMMUNITY HOTEL CORPORATION

CONSUMERS ICE AND COAL CO.

BRAEBURN STEEL COMPANY

FIRST NATIONAL BANK,
Springfield, Ohio

ALPHA PORTLAND CEMENT CO.

RUDOLPH P. MILLER
Con. Engineer, Borough of Manhattan.

LACKEY & HETTEL, Architects.

HAYES & HOADLEY, Architects.

CARLTON STRONG, Architect.

S. S. BEMAN, Architect.

W. K. SHILLING, Architect.

LEWIS COLT ALBRO, Architect.

GEBHART & SCHAEFER, Architects.

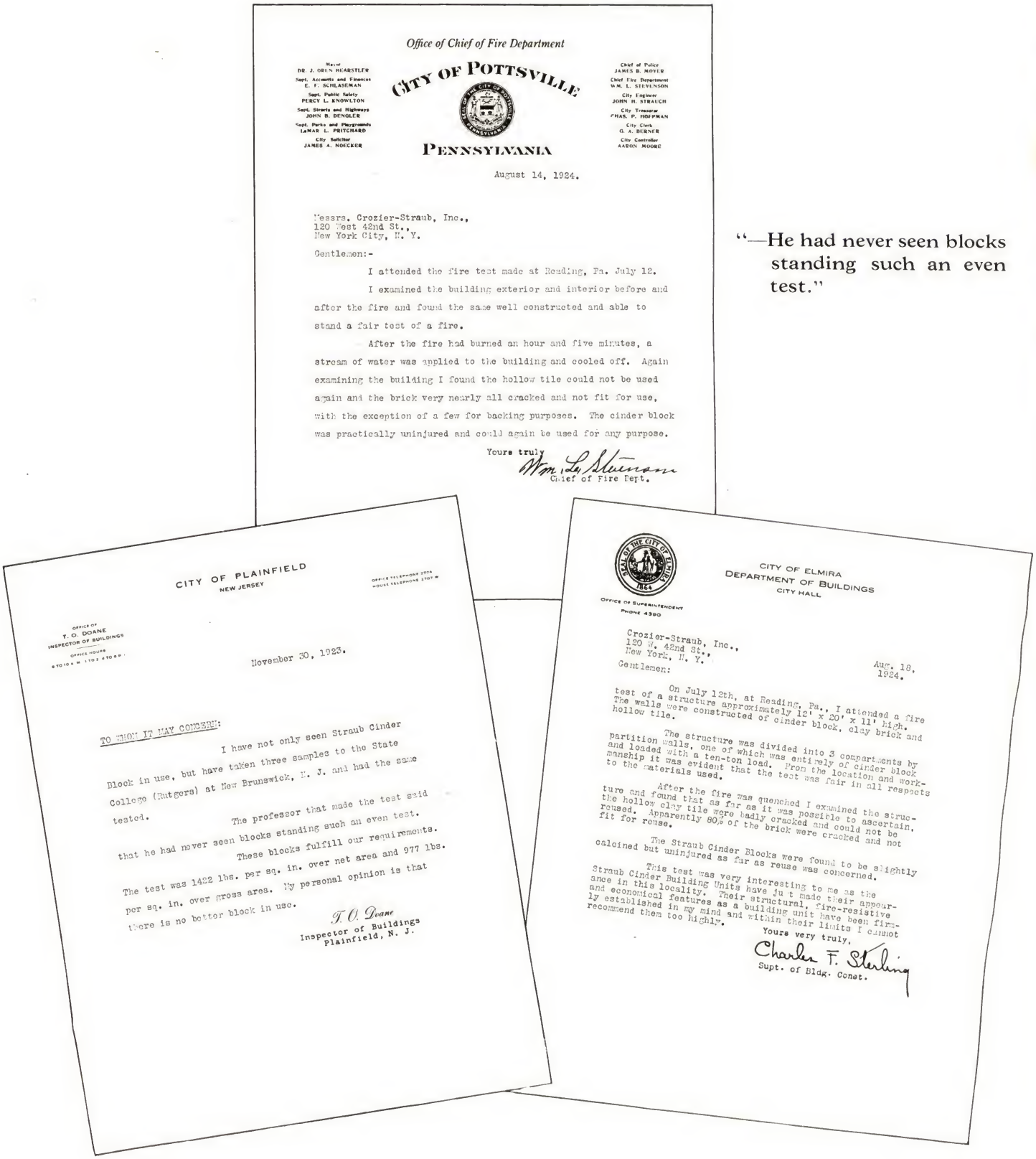
HOWARD J. WIEGNER.

EDWARDSVILLE BOROUGH,
Town Council.

PAUXTIS MOTOR SALES CO.

TENAFLY LUMBER & SUPPLY CO.

PORTLAND CEMENT ASSOCIATION



Office of Chief of Fire Department

Mayor
DR. J. ORIN HEARSTLER
Supt. Accounts and Finances
E. F. SCHLASEMAN
Supt. Public Safety
PERCY L. KNOWLTON
Supt. Streets and Highways
JOHN B. DENGLER
Supt. Parks and Playgrounds
LaMAR L. PRITCHARD
City Solicitor
JAMES A. NOECKER

CITY OF POTTSVILLE
PENNSYLVANIA

Chief of Police
JAMES B. MOYER
Chief Fire Department
WM. L. STEVENSON
City Engineer
JOHN H. STRAUCH
City Treasurer
CHAS. P. HOFFMAN
City Clerk
G. A. BERNER
City Controller
AARON MOORE

August 14, 1924.

Messrs. Crozier-Straub, Inc.,
120 West 42nd St.,
New York City, N. Y.

Gentlemen:-

I attended the fire test made at Reading, Pa. July 12.

I examined the building exterior and interior before and after the fire and found the same well constructed and able to stand a fair test of a fire.

After the fire had burned an hour and five minutes, a stream of water was applied to the building and cooled off. Again examining the building I found the hollow tile could not be used again and the brick very nearly all cracked and not fit for use, with the exception of a few for backing purposes. The cinder block was practically uninjured and could again be used for any purpose.

Yours truly
Wm. L. Stevenson
Chief of Fire Dept.

"—He had never seen blocks standing such an even test."

CITY OF PLAINFIELD
NEW JERSEY

OFFICE TELEPHONE 2704
HOUSE TELEPHONE 2707 W

OFFICE OF
T. O. DOANE
INSPECTOR OF BUILDINGS
OFFICE HOURS
8 TO 10 A. M. 1 TO 2 4 TO 6 P. M.

November 30, 1923.

TO WHOM IT MAY CONCERN:

I have not only seen Straub Cinder Block in use, but have taken three samples to the State College (Rutgers) at New Brunswick, N. J. and had the same tested.

The professor that made the test said that he had never seen blocks standing such an even test.

These blocks fulfill our requirements. The test was 1422 lbs. per sq. in. over net area and 977 lbs. per sq. in. over gross area. My personal opinion is that there is no better block in use.

T. O. Doane
Inspector of Buildings
Plainfield, N. J.

CITY OF ELMIRA
DEPARTMENT OF BUILDINGS
CITY HALL

OFFICE OF SUPERINTENDENT
PHONE 4390

Crozier-Straub, Inc.,
120 W. 42nd St.,
New York, N. Y.

Aug. 18, 1924.

Gentlemen:

On July 12th, at Reading, Pa., I attended a fire test of a structure approximately 12' x 20' x 11' high. The walls were constructed of cinder block, clay brick and hollow tile.

The structure was divided into 3 compartments by partition walls, one of which was entirely of cinder block and loaded with a ten-ton load. From the location and workmanship it was evident that the test was fair in all respects to the materials used.

After the fire was quenched I examined the structure and found that as far as it was possible to ascertain, the hollow clay tile were badly cracked and could not be reused. Apparently 80% of the brick were cracked and not fit for reuse.

The Straub Cinder Blocks were found to be slightly calcined but uninjured as far as reuse was concerned.

This test was very interesting to me as the Straub Cinder Building Units have ju t made their appearance in this locality. Their structural, fire-resistive and economical features as a building unit have been firmly established in my mind and within their limits I cannot recommend them too highly.

Yours very truly,
Charles F. Sterling
Supt. of Bldg. Const.

CITY OF PITTSBURGH
PENNSYLVANIA

DEPARTMENT OF PUBLIC SAFETY
BUREAU OF BUILDING INSPECTION
ROBERT K. COCHRANE
SUPERINTENDENT
WM. LESEMAN, ASSISTANT SUPERINTENDENT
RICHARD NEFF, CHIEF ENGINEER
M. J. HOOPER, CHIEF CLERK

Jan. 17th, 1922.

Mr. F. J. Straub,
New Kensington, Pa.

In accordance with your request, the writer made a trip to New Kensington, Pa., December 4th, 1921, to ascertain the value and various conditions in the manufacture and use of the Straub Cinder Concrete Block, and I take this opportunity to report to you my findings and general opinion of the conditions which I found on this occasion.

In the first place I was astounded at the fact that the whole town of New Kensington seemed to be built of cinder concrete block for no matter where I looked the cinder block was used almost exclusively.

I took this trip with the thought in mind that my opinion could not be favorable to the cinder block, but I must admit that I came away with a wholly different view on the subject. I have come to the conclusion that cinder blocks, if made right, are an asset to the building world and should be more extensively used.

I would further state that the thing that stands out foremost in favor of the block is the Fire Test, which was conducted at New Kensington. I observed there the action of what was probably as severe a test as could be made of any material, a very hot fire and then while the blocks were still red-hot the water applied showed no perceptible effect on the blocks. The surface of the blocks was hard and firm with no disintegration whatsoever. The penetration of fire seemed to be less than a quarter of an inch.

It seems to me from a fire-proof standpoint the cinder block stands out paramount from any other known building material of today.

During my inspection of many of the fifteen hundred, or more, homes, buildings, garages and manufacturing plants in this town, I found several things worth noting and cannot refrain from making mention of them. I found the various buildings I inspected to be perfectly dry and I noted particularly the foundations which were totally under ground and not having plastered walls.

Another very interesting feature was the Bottling Works building which was destroyed by fire, although the walls fell the cinder blocks were found to be intact and were being used again in rebuilding.

The fact that nails can be driven into the block for the purpose of attaching wood or other materials used in the course of construction, without causing cracks or splits in the blocks also developing a good clinch on the nails equal to that of wood is a point to be considered.

In examining some of the blocks that had been placed in the weather about seven years ago, I found that part of the nail which was driven into the block to be in perfect condition and the part exposed almost destroyed. This to my mind proves the cinder block to be damp proof.

The four inch blocks make excellent back-up blocks and should serve to keep the structure dry as well as warm. The many buildings I saw of four inch exterior walls were remarkable but as an engineer I would not recommend walls of this thickness.

The bond developed between the cinder block and the mortar joint is very strong and therefore makes a strong and permanent wall.

Another noteworthy feature was the sidewalk laid of the large 8x4x24" back-up blocks. This walk was laid about seven years ago directly on the ground. The blocks were not broken, disintegrated or worn, thereby proving that the weather or wear had no effect on the block.

The various things I have mentioned are but a few that could be said in favor of the Straub Cinder Block and since visiting your town I am convinced that the block made according to your process of manufacture is an innovation in the concrete block industry. Of course your process and method must be adhered to, to maintain the efficiency of the cinder block.

In conclusion allow me to say that I believe that the Cinder Block could be used for all classes of buildings where concrete blocks are used and I fully recommend the block for durability, safety and economy.

Yours very truly,

Richard Neff

Chief Engineer.

CITY OF PITTSBURGH
PENNSYLVANIA

DEPARTMENT OF PUBLIC SAFETY
BUREAU OF BUILDING INSPECTION
OFFICE OF THE SUPERINTENDENT

July 16th, 1924.

Messrs. Crozier-Straub, Inc.,
120 West 42nd Street,
New York, N. Y.

Gentlemen:

I attended the fire test made at Reading, Pa., July 12th. The building was 12 x 20 x 11 feet high with a wood roof. The outer walls were constructed of cinder block, face brick and hollow clay tile. The front of the building, with openings for firing, was entirely of cinder blocks. There were three compartments. One of the partition walls was entirely of Straub blocks and on top of this wall was placed ten tons of pig iron. The other compartment wall was composed of cinder blocks, hollow clay tile and face brick. There was no weight placed on top of this partition. All walls were eight inches in thickness.

I examined the exterior and interior walls before the fire and found the workmanship to be good and the material arranged in a manner indicating every intention that the test might be fair to all materials used.

After the fire had been quenched at the end of one hour and thirty minutes, I again examined the walls and found that 99% of the clay tile were cracked and certainly looked as if they were not reusable. At least 50% of the brick were destroyed for further use. The Straub blocks were practically uninjured, so far as re-use was concerned.

This is not the first fire test I have seen in which Straub Blocks were exposed to even greater heat and, therefore, I was fully prepared to see these results.

For more than four years I have been convinced that Straub blocks are paramount in fireproof qualities compared with any other known building material, but it was not until after I was convinced of their other structural qualities that their use was permitted in the City of Pittsburgh, and this material, made in accordance with the Straub process, I fully recommend for durability, safety and economical construction.

Yours very truly,

Richard Neff

RN:S

Chief Engineer.

"I fully recommend the block for durability, safety and economy."

"I am more convinced than ever that this construction is the most satisfactory and economical—"

ALPHA PORTLAND CEMENT CO.

OFFICES
EASTON, PA. CHICAGO, ILL.

SALES OFFICES
NEW YORK, PHILADELPHIA, PITTSBURGH, IRONTON, OHIO, ST. LOUIS, BOSTON, BALTIMORE, BATTLE CREEK, MICH

PLANTS
ALPHA, N. J. MANHEIM, W. VA
MARTINS CREEK, PA. IRONTON, OHIO
CEMENTON, N. Y. BELLEVUE, MICH.
JAMESVILLE, N. Y. LASALLE, ILL.
ST. LOUIS

SALES DEPARTMENT
F. M. COGAN, VICE PRESIDENT
THOS. M. OYER, GENERAL SALES MANAGER

EASTON, PA., Dec. 16, 1924.

Berks Building Block Co.,
Reading, Penna.

Gentlemen:

In response to your inquiry with reference to my present opinion of Straub Blocks, would say that after having personally supervised the erection of my new residence in which these blocks were used exclusively from the basement floor up, I am more convinced than ever that this construction is the most satisfactory and economical that I could have used.

Concerning the penetration of dampness, I have found that we made no mistake in plastering direct on the blocks on the inside and stuccoing without waterproofing, two coats on the outside. Were I to build again, I would do precisely the same, unless it is developed in the meantime that the stucco is unnecessary. I understand there are one or two dwellings already up with Straub Blocks where it is not the intention to stucco and it is my purpose to watch the experiment, not only on account of the economy or saving effected, but on account of preserving the original block color. To my personal notion, it is softer and more pleasing to the eye than a colored stucco or paint job.

With best wishes for your success, I remain

Yours truly,
E. P. Williams
District Sales Manager.

EPW/M

ALPHA—"The-High-Water-Mark-of-Quality"

HOWARD J. WIEGNER
ARCHITECT

IN RE

BETHLEHEM, PA.

Feb. 5, 1925.

Mr. G. H. Muth, Mgr.,
Berks Building Block Co.,
Reading, Pa.

Dear Sir:

I have been specifying and using Straub patent cinder blocks for the past two years and find that they are certainly all right, and it is my intention to continue the use of them.

Further than this I do not know what else to say, for the cinder block is everything that is claimed for it.

With kindest personal regards, I remain

Very truly yours,

Howard J. Wiegner
Ref. an Ar

"There is practically no breakage whatever in the Cinder Block."

The Camden Community Hotel Construction

COMMUNITY HOTEL CORPORATION
OF CAMDEN, N. J.
OWNERS

H. L. STEVENS & COMPANY
ARCHITECTS
NEW YORK, N. Y.

Concrete Specialties Company,
Mt. Ephraim Avenue,
Camden, New Jersey.

CAMDEN, N. J.
February 19, 1925

Attention: Mr. L. A. Goodwin

Dear Sir:

Regarding the use of cinder block in the new Walt Whitman Hotel at Camden, N. J., we may say that all exterior walls in this building are backed up with this material.

We have also used your cinder concrete built up lintels over window openings, and for a considerable area of the floors, have used the 8" x 12" x 8" block in lieu of hollow tile.

During the construction of this eight story reinforced concrete building, we were held up on deliveries of 8" x 12" x 12" hollow tile for flooring, and to facilitate progress, we decided to use the Concrete Specialties Company's 8" x 12" x 8" half-foundation blocks.

We found the weight of these blocks practically the same as that of the tile. We also found that the blocks laid up on our forms to better advantage, and did not shift so readily from their original position, and that, being unbaked, they came on the job more uniform in size and shape than the kiln-baked tile. They laid in very quickly, and once placed, were not easily dislodged from their position.

When these floors were stripped, the blocks showed a more even surface which will require less labor in plastering to produce a good job, and we believe the block to be a considerable labor saver over the use of floor tile.

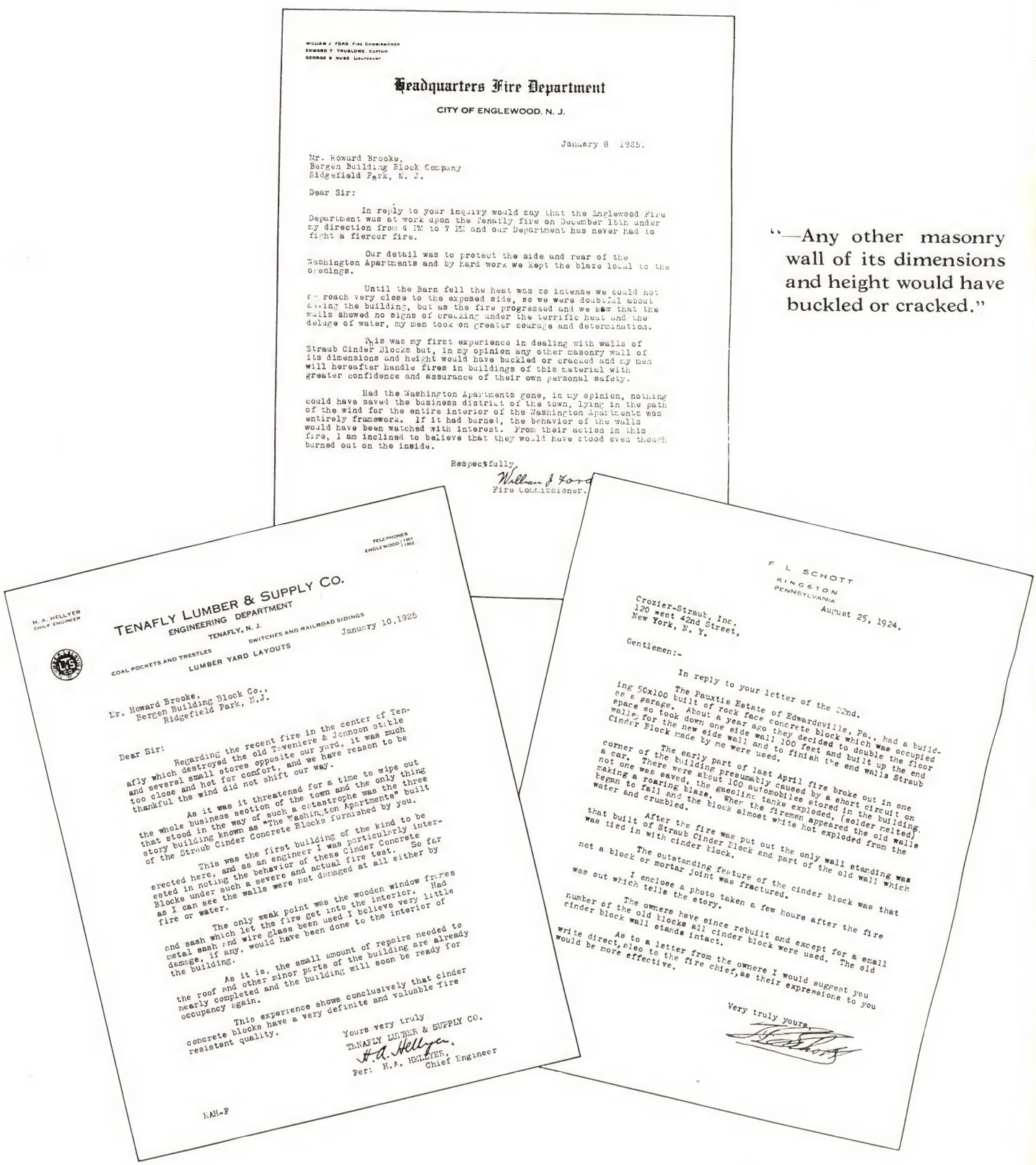
Both as regards the labor saved in placing and the absolute lack of breakage, we have found this block to be very satisfactory for all uses. There is practically no breakage whatever in the cinder block.

Personally, I do not hesitate to recommend the use of this block for any of the above purposes. May I also congratulate your plant for exceptional service and deliveries.

Very truly yours,

CAMDEN COMMUNITY HOTEL CONSTRUCTION.

Geo. P. Quigley,
Superintendent.



WILLIAM J. FORD Fire Commissioner
EDWARD T. TRUSLOWE, Captain
GEORGE A. HUBE, Lieutenant

Headquarters Fire Department

CITY OF ENGLEWOOD, N. J.

January 8 1925.

Mr. Howard Brooke,
Bergen Building Block Company
Ridgefield Park, N. J.

Dear Sir:

In reply to your inquiry would say that the Englewood Fire Department was at work upon the Penalty fire on December 15th under my direction from 4 PM to 7 PM and our Department has never had to fight a fiercer fire.

Our detail was to protect the side and rear of the Washington Apartments and by hard work we kept the blaze local to the openings.

Until the Barn fell the heat was so intense we could not approach very close to the exposed side, so we were doubtful about saving the building, but as the fire progressed and we saw that the walls showed no signs of cracking under the terrific heat and the deluge of water, my men took on greater courage and determination.

This was my first experience in dealing with walls of Straub Cinder Blocks but, in my opinion any other masonry wall of its dimensions and height would have buckled or cracked and my men will hereafter handle fires in buildings of this material with greater confidence and assurance of their own personal safety.

Had the Washington Apartments gone, in my opinion, nothing could have saved the business district of the town, lying in the path of the wind for the entire interior of the Washington Apartments was entirely framework. If it had burned, the behavior of the walls would have been watched with interest. From their action in this fire, I am inclined to believe that they would have stood even though burned out on the inside.

Respectfully,
William J. Ford
Fire Commissioner.

"—Any other masonry wall of its dimensions and height would have buckled or cracked."

H. A. HELLYER
CHIEF ENGINEER

TELEPHONES
ENGLEWOOD 1801
1802

TENAFLY LUMBER & SUPPLY CO.
ENGINEERING DEPARTMENT
TENAFLY, N. J.

COAL POCKETS AND TRESTLES — SWITCHES AND RAILROAD SIDINGS
LUMBER YARD LAYOUTS

January 10,1925

Mr. Howard Brooke,
Bergen Building Block Co.,
Ridgefield Park, N.J.

Dear Sir:

Regarding the recent fire in the center of Tenafly which destroyed the old Taveniere & Jonnson stible and several small stores opposite our yard, it was much too close and hot for comfort, and we have reason to be thankful the wind did not shift our way.

As it was it threatened for a time to wipe out the whole business section of the town and the only thing that stood in the way of such a catastrophe was the three story building known as "The Washington Apartments" built of the Straub Cinder Concrete Blocks furnished by you.

This was the first building of the kind to be erected here, and as an engineer I was particularly interested in noting the behavior of these Cinder Concrete Blocks under such a severe and actual fire test. So far as I can see the walls were not damaged at all either by fire or water.

The only weak point was the wooden window frames and sash which let the fire get into the interior. Had metal sash and wire glass been used I believe very little damage, if any, would have been done to the interior of the building.

As it is, the small amount of repairs needed to the roof and other minor parts of the building are already nearly completed and the building will soon be ready for occupancy again.

This experience shows conclusively that cinder concrete blocks have a very definite and valuable fire resistent quality.

Yours very truly
TENAFLY LUMBER & SUPPLY CO.
H.A. Hellyer.
Per: H.A. HELLYER,
Chief Engineer

HAH-F

F L SCHOTT
KINGSTON
PENNSYLVANIA

August 25, 1924.

Crozier-Straub, Inc.
120 west 42nd Street,
New York, N. Y.

Gentlemen:-

In reply to your letter of the 22nd.

The Pauxtis Estate of Edwardsville, Pa., had a building 50x100 built of rock face concrete block which was occupied as a garage. About a year ago they decided to double the floor space so took down one side wall 100 feet and built up the end walls for the new side wall and to finish the end walls Straub Cinder Block made by me were used.

The early part of last April fire broke out in one corner of the building presumably caused by a short circuit on a car. There were about 100 automobiles stored in the building not one was saved, the gasoline tanks exploded, [solder melted] making a roaring blaze. When the firemen appeared the old walls began to fall and the block almost white hot exploded from the water and crumbled.

After the fire was put out the only wall standing was that built of Straub Cinder Block end part of the old wall which was tied in with cinder block.

The outstanding feature of the cinder block was that not a block or mortar joint was fractured.

I enclose a photo taken a few hours after the fire was out which tells the etory.

The owners have since rebuilt and except for a small number of the old blocks all cinder block were used. The old cinder block wall stands intact.

As to a letter from the owners I would suggest you write direct, also to the fire chief, as their expressions to you would be more effective.

Very truly yours,
F L Schott

A letter from the author of the New York Building Code.

RUDOLPH P. MILLER
M. AM. SOC. C. E.
CONSULTING ENGINEER
NEW YORK

TEL. 8636 BRYANT

25 WEST 45 STREET

January 22, 1925.

Mr. Howard Brooke,
22 Engle Avenue,
Englewood, N. J.

Dear Sir:

Complying with your request for an expression of my opinion on the performance of the Straub Cinder Concrete Blocks in the fire of December 15, 1924, at Tenafly, N. J., I can say that the block walls resisted the attack of fire in a highly commendable manner and undoubtedly prevented the spread of the fire into a conflagration.

From my examination of the premises on December 26, and conversation with witnesses, I believe that the fire was of more than ordinary severity and that the walls of cinder concrete blocks were subjected to very high temperatures for a period of more than three hours while the fire burned at its height.

The bearing walls and the veneer walls of cinder concrete blocks are apparently as structurally safe as prior to the fire. Slight calcination of the exposed surfaces of the blocks occurred where the fire was severest discoloring them to brownish tint, but such discoloration should not be seriously objectionable.

Many blocks in the exposed walls were tested with blows from a hammer and they rang as clearly as new blocks when struck. It should not be necessary to replace any blocks either for safety or because of their appearance.

The communication of fire from building to building was through unprotected wall openings and in no case through cinder block walls. The slight damage occuring in the one-story store building and the location of the damage in the apartment house are examples of this.

It is undoubtedly true that the block veneering on the apartment house alone made it possible to save this building from destruction and afforded the necessary fire stop to prevent a conflagration.

Yours very truly,

Rudolph P. Miller.

RNM - a

"Every cinder block was used again in the construction of the new building."

Engine and Hose Co. No. 1

Kingston, Pa., September 15, 1924. *192*

Mr. F. L. Schott,

Kingston, Pa.

Subject: Straub Cinder Block
Fire: Pauxtis Garage.

Dear Sir:-

The fire which occurred in this garage was most intense, as there were about 100 cars destroyed and each car had gas in the tank.

After the fire I examined the building, which was 100'x100', one story, built partly of ordinary concrete block and partly of Straub Cinder block. I found that the only walls remaining intact were those built of the Cinder block and I noticed particularly that none of the Cinder block or mortar joints bonding them were even fractured. The common concrete blocks crumbled and very few could be used again.

The garage has since been rebuilt and your cinder blocks were used; the former cinder block wall which went through the fire needed no rebuilding and stands a credit to the merits of the material.

The fireproof qualities of Straub Cinder Block was certainly proven in this fire and I have never seen its equal.

Very truly yours,

George Schallenberger

CHIEF OF FIRE DEPARTMENT.

...Edwardsville Borough Town Council...

OFFICE OF THE SECRETARY

Edwardsville, Pa., September 15, 1924

Mr. F. L. Schott,
Kingston, Pa.

Subject: Pauxtis Garage fire
Straub Cinder Block.

Dear Sir:-

Regarding the fire resisting qualities of the Straub Cinder blocks made by you and used in the construction of the Pauxtis garage, wish to say that the way they withstood the terrible heat they were subjected to, was in my opinion truly remarkable.

On the 5th day of April of this year the garage took fire; you can imagine what kind of a fire it was when I tell you that there were between 90 and 100 cars stored in the building at the time and every one of them were burned beyond repair, but thanks to the construction of the building in which the fire started, which confine the flames to the building in a very good test for your according to my way of thinking was a very good test is that every Cinder Blocks. Another remarkable thing about them is that every cinder block was used again in the construction of the new building, after being subjected to the terrible heat and water test they must have been through. This is in my opinion a very severe test for your Straub Cinder blocks from a fire resisting standpoint.

I am sure that the people residing in the vicinity of this terrible fire cannot praise them too highly, which also expresses my sentiments.

Very truly yours,

Hugh Jones

CHIEF OF EDWARDSVILLE FIRE DEP'T.

PAUXTIS MOTOR SALES CO.

HUDSON AND ESSEX MOTOR CARS

24 HILLSIDE AVENUE

EDWARDSVILLE, PA., August 28, 1924

Crozier-Straub, Inc.,
120 West 42nd Street,
New York, N. Y.

Gentlemen:

I do not hesitate in the least regarding a report and opinion of Straub Cinder Blocks. Our garage, 100' x 100' with a wooden roof was built with two kinds of blocks, the ordinary sand block and the Straub cinder block. As to the intensity of the heat of the fire that destroyed this building on April 5th, 1924, you can best judge when I state that practically every one of the ninety-seven cars in the garage, were so ruined that even the junk men refused to salvage whatever remained.

The Straub Blocks were nearest the hottest flame and with the exception of being blackened are as good as ever. Water was played on these blocks but not a crack has appeared, which in my judgment is a very good test. If it had not been for these blocks I dare say the fire would have spread to thousands of dollars damage.

We have had many contractors in our locality examine these blocks after the fire and each one has marveled at their condition. The other (sand) blocks were all destroyed when they fell and broke or were ruined by water after the fire.

The Straub Cinder Block in my opinion is the best block I know. I am pleased to write this letter as the Straub Cinder Block has saved us a great deal of expense, and trust you will find the demand for your product increasing.

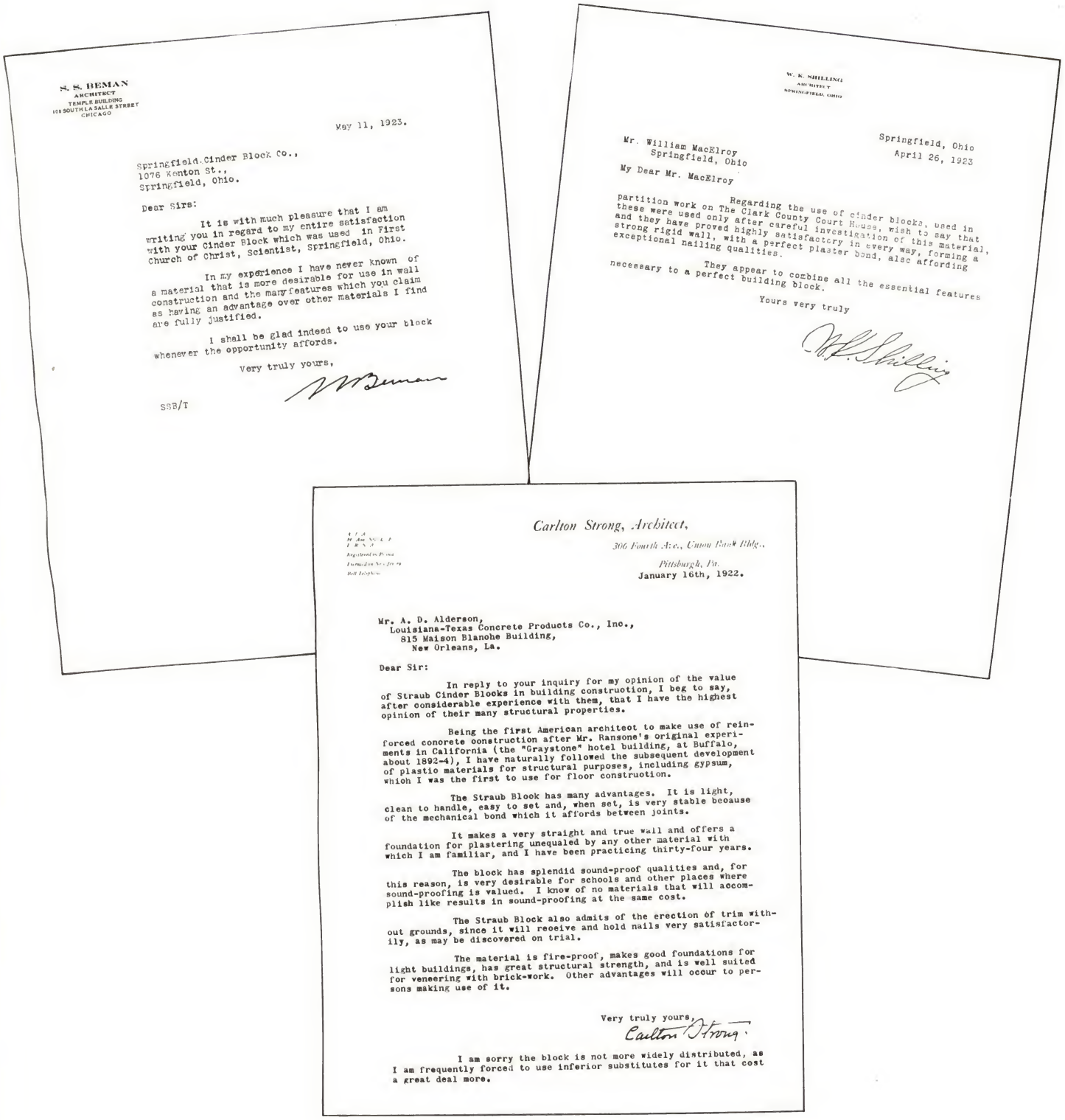
Yours very truly,

William G. Pauxtis

WGP/A

STRAUB Cinder Building BLOCKS

"In my experience I have never known of a material that is more desirable."



S. S. BEMAN
ARCHITECT
TEMPLE BUILDING
108 SOUTH LA SALLE STREET
CHICAGO

May 11, 1923.

Springfield Cinder Block Co.,
1076 Kenton St.,
Springfield, Ohio.

Dear Sirs:

It is with much pleasure that I am writing you in regard to my entire satisfaction with your Cinder Block which was used in First Church of Christ, Scientist, Springfield, Ohio.

In my experience I have never known of a material that is more desirable for use in wall construction and the many features which you claim as having an advantage over other materials I find are fully justified.

I shall be glad indeed to use your block whenever the opportunity affords.

Very truly yours,

SSB/T

W. K. SHILLING
ARCHITECT
SPRINGFIELD, OHIO

Springfield, Ohio
April 26, 1923

Mr. William MacElroy
Springfield, Ohio

My Dear Mr. MacElroy

Regarding the use of cinder blocks, used in partition work on The Clark County Court House, wish to say that these were used only after careful investigation of this material, and they have proved highly satisfactory in every way, forming a strong rigid wall, with a perfect plaster bond, also affording exceptional nailing qualities.

They appear to combine all the essential features necessary to a perfect building block.

Yours very truly

W. K. Shilling

Carlton Strong, Architect,
306 Fourth Ave., Union Bank Bldg.,
Pittsburgh, Pa.
January 16th, 1922.

Mr. A. D. Alderson,
Louisiana-Texas Concrete Products Co., Inc.,
815 Maison Blanche Building,
New Orleans, La.

Dear Sir:

In reply to your inquiry for my opinion of the value of Straub Cinder Blocks in building construction, I beg to say, after considerable experience with them, that I have the highest opinion of their many structural properties.

Being the first American architect to make use of reinforced concrete construction after Mr. Ransone's original experiments in California (the "Graystone" hotel building, at Buffalo, about 1892-4), I have naturally followed the subsequent development of plastic materials for structural purposes, including gypsum, which I was the first to use for floor construction.

The Straub Block has many advantages. It is light, clean to handle, easy to set and, when set, is very stable because of the mechanical bond which it affords between joints.

It makes a very straight and true wall and offers a foundation for plastering unequaled by any other material with which I am familiar, and I have been practicing thirty-four years.

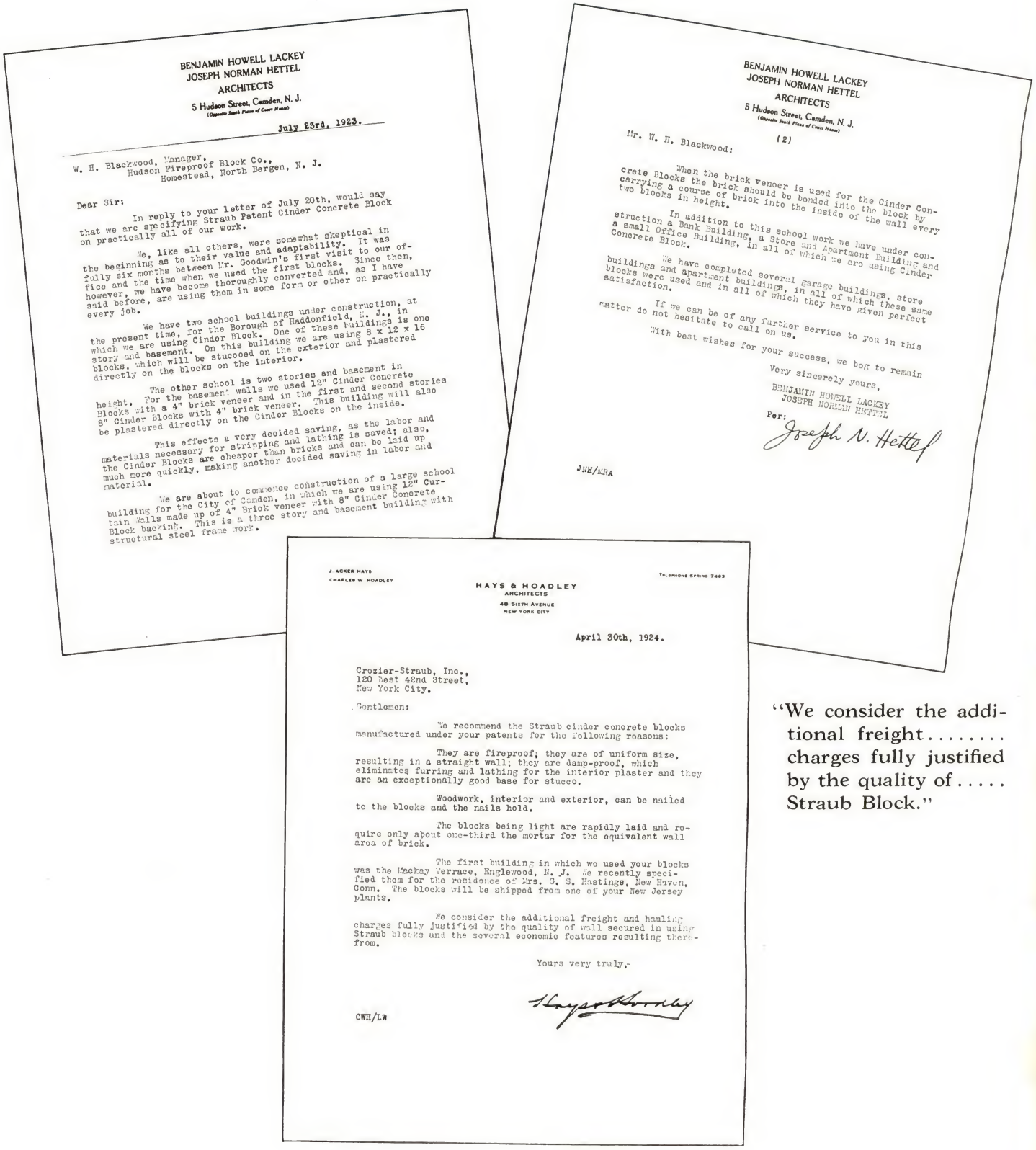
The block has splendid sound-proof qualities and, for this reason, is very desirable for schools and other places where sound-proofing is valued. I know of no materials that will accomplish like results in sound-proofing at the same cost.

The Straub Block also admits of the erection of trim without grounds, since it will receive and hold nails very satisfactorily, as may be discovered on trial.

The material is fire-proof, makes good foundations for light buildings, has great structural strength, and is well suited for veneering with brick-work. Other advantages will occur to persons making use of it.

Very truly yours,
Carlton Strong

I am sorry the block is not more widely distributed, as I am frequently forced to use inferior substitutes for it that cost a great deal more.



BENJAMIN HOWELL LACKEY
JOSEPH NORMAN HETTEL
ARCHITECTS
5 Hudson Street, Camden, N. J.
(Opposite South Plaza of Court House)

July 23rd, 1923.

W. H. Blackwood, Manager,
Hudson Fireproof Block Co.,
Homestead, North Bergen, N. J.

Dear Sir:

In reply to your letter of July 20th, would say that we are specifying Straub Patent Cinder Concrete Block on practically all of our work.

We, like all others, were somewhat skeptical in the beginning as to their value and adaptability. It was fully six months between Mr. Goodwin's first visit to our office and the time when we used the first blocks. Since then, however, we have become thoroughly converted and, as I have said before, are using them in some form or other on practically every job.

We have two school buildings under construction, at the present time, for the Borough of Haddonfield, N. J., in which we are using Cinder Block. One of these buildings is one story and basement. On this building we are using 8 x 12 x 16 blocks, which will be stuccoed on the exterior and plastered directly on the blocks on the interior.

The other school is two stories and basement in height. For the basement walls we used 12" Cinder Concrete Blocks with a 4" brick veneer and in the first and second stories 8" Cinder Blocks with 4" brick veneer. This building will also be plastered directly on the Cinder Blocks on the inside.

This effects a very decided saving, as the labor and materials necessary for stripping and lathing is saved; also, the Cinder Blocks are cheaper than bricks and can be laid up much more quickly, making another decided saving in labor and materiel.

We are about to commence construction of a large school building for the City of Camden, in which we are using 12" Curtain Walls made up of 4" Brick veneer with 8" Cinder Concrete Block backing. This is a three story and basement building with structural steel frame work.

BENJAMIN HOWELL LACKEY
JOSEPH NORMAN HETTEL
ARCHITECTS
5 Hudson Street, Camden, N. J.
(Opposite South Plaza of Court House)

(2)

Mr. W. H. Blackwood:

When the brick veneer is used for the Cinder Concrete Blocks the brick should be bonded into the block by carrying a course of brick into the inside of the wall every two blocks in height.

In addition to this school work we have under construction a Bank Building, a Store and Apartment Building and a small Office Building, in all of which we are using Cinder Concrete Block.

We have completed several garage buildings, store buildings and apartment buildings, in all of which these same blocks were used and in all of which they have given perfect satisfaction.

If we can be of any further service to you in this matter do not hesitate to call on us.

With best wishes for your success, we beg to remain

Very sincerely yours,

BENJAMIN HOWELL LACKEY
JOSEPH NORMAN HETTEL

Per: Joseph N. Hettel

JNH/MBA

J. ACKER HAYS
CHARLES W. HOADLEY

HAYS & HOADLEY
ARCHITECTS
48 SIXTH AVENUE
NEW YORK CITY

TELEPHONE SPRING 7483

April 30th, 1924.

Crozier-Straub, Inc.,
120 West 42nd Street,
New York City.

Gentlemen:

We recommend the Straub cinder concrete blocks manufactured under your patents for the following reasons:

They are fireproof; they are of uniform size, resulting in a straight wall; they are damp-proof, which eliminates furring and lathing for the interior plaster and they are an exceptionally good base for stucco.

Woodwork, interior and exterior, can be nailed to the blocks and the nails hold.

The blocks being light are rapidly laid and require only about one-third the mortar for the equivalent wall area of brick.

The first building in which we used your blocks was the Mackay Terrace, Englewood, N. J. We recently specified them for the residence of Mrs. C. S. Hastings, New Haven, Conn. The blocks will be shipped from one of your New Jersey plants.

We consider the additional freight and hauling charges fully justified by the quality of wall secured in using Straub blocks and the several economic features resulting therefrom.

Yours very truly,

Hays & Hoadley

CWH/LW

"We consider the additional freight..... charges fully justified by the quality of..... Straub Block."

LEWIS COLT ALBRO
ARCHITECT
2 WEST 47th STREET
NEW YORK

LOVETT RILE

March 26th, 1923.

The Springfield Cinder Block Company,
1076 Kenton Street,
Springfield, Ohio.

Gentlemen:-

I want to give my unqualified approval of the cinder block you are making, and which I first used in the stable and garage of Mr. John L. Bushnell at Springfield, Ohio.

The block has so many good points that it is difficult to mention all of them, but for exterior work, which is to receive stucco on the outside, and for interior partitions, because of its nail driving possibilities, I know of no block on the market which can equal it.

The blocks are so perfectly made with their interlocking, tongue and grove end joints, that they must lay very quickly, and the lightness of the block is also an element of much importance.

They are, of course, absolutely fireproof, and made under hydraulic pressure they are absolutely uniform in size and shape.

Because of their lightness, toughness, and interlocking and fireproof qualities, combined with the rapidity with which they can be laid, I believe you have a block which will prove an enormous success in the building material world.

I shall be glad at any time to answer individually any inquiries from my brother architects in regard to your block.

Faithfully yours,

Lewis Colt Albro

"The block has so many good points that it is difficult to mention all of them."

Rolin B. Gebhart, A.I.A.
Walter G. Schaeffer, A.I.A.

Office of Gebhart and Schaeffer, Architects
Keith Theatre Building
Dayton, Ohio

Springfield Cinder Block Co.,
1076 Kenton Street,
Springfield, Ohio.

Subject:-Cinder Block

Gentlemen:

In reply to your inquiry as to our opinion of Cinder Block we are pleased to say that it meets our entire approval. Church of Christ, Scientist in Dayton has proven to us its superior value as a filler block that insures a level ceiling in the case of this building without addition to plaster on direct, or as in the case of furring without excellent nailing medium for the applying direct of furring without toggles or plugging. We are convinced that it is better than clay tile for this use.

Incidentally the cinder brick with which we have built the interior and exterior back up walls have demonstrated the great savings obtained by the nailing feature alone, not to mention its qualities as a base for plaster.

The writer has used the 8" blocks in the walls from fottings to roof, of a stucco residence for himself. The tought structure of the blocks is remarkable as is demonstrated in cutting for pipe chases, etc.

We have never found a material so adaptable and flexible as your block and propose to use it in our work wherever we can. The fact that it is made under heavy pressure is evident in its true and straight form and in the above mentioned tenacious tough character.

S-LJB

February 3, 1925

Very truly yours,
GEBHART & SCHAEFFER,
Per Walter G. Schaeffer.

"These blocks are far more economical in laying and far better as a base for plastering."

744 East Main Street,
Annville, Pa.,
April 25, 1924.

Mr. C. H. Muth,
Berks Building Block Co.,
Reading, Pa.

Dear Sir:

At 744 East Main Street, Annville, Pa., I have a bungalow, built of Straub Cinder Block. Although this house has been closed off and on during the past winter for three and four weeks at a time, the walls were altogether free from dampness upon my return.

I can highly recommend the block for its moisture and dampproof qualities. The paper on my walls is as good now as when first put on. Any person interested can stop in and inspect the house.

Very truly yours,

Mrs. Catherine Pierce

536 COURT STREET,
READING, PA.
PHONE 4813

VICTOR GONDOS
ENGINEER AND GENERAL CONTRACTOR
ADDRESS ALL COMMUNICATIONS TO READING OFFICE

22 SOUTH FIFTEENTH STREET
PHILADELPHIA, PA.
PHONE SPRUCE 4333

October 10, 1924

Pottsville Building Block Company,
Pottsville, Pa.

Gentlemen:

Re: Frackville High School

You will recall that some time ago, the Frackville School Board decided to discontinue the use of hollow terra cotta tile in the new High School Building under construction. Also, they authorized me to use cinder blocks instead, manufactured by your Company.

The main reason that led the School Board to this decision was the fact that shipments of terra cotta tile came very irregularly at the height of the season, and actually threatened to tie up the job, whereas your product could be delivered by trucks day by day as called for.

The Architect, the School Board and myself were greatly impressed by the report of the very successful fire tests and strength, as shown in the well known Reading experiments.

Actual use of the blocks during the construction of the new High School Building convinced me that these blocks are also far more economical in laying and far better as a base for plastering than the hollow tile blocks, which are often warped out of shape. The fact that grounds, mouldings and anchors can easily be nailed to these blocks is an additional factor of speed and economy.

Structurally, the heavy web sections insure a bearing far more reliable than the thin sections of hollow tile.

VG/GR

Yours very truly,

Victor Gondos

"—Warm in winter, cool in summer, and free from all moisture—."

CONSUMERS ICE AND COAL COMPANY
PLUM AND LIBERTY STREETS
LANCASTER, PA.

Lancaster Concrete Tile Co., Feb. 3, 1922.
Lancaster, Pa.
Gentlemen:-

Replying to your inquiry of this date concerning the condition of the walls of our new ice storage building constructed of your blocks, we are pleased to say that the walls are standing up to our complete satisfaction.

Our building as you know is 60' x 130' x 40' high. It is remarkable that there appears in this wall only one small crack, which we do not feel is due to the blocks. This crack sprung in the outer part of the wall near a steel column and does not show through the wall on the inside. There is not a sign of it in the five inch cork lining on the inside, and which has been on the wall about two months. We are very much pleased that this 380 ft. wall, 40 ft. high, shows only one small crack.

We shall be pleased at any time to show our building to any one interested in your block for construction work.

Yours very truly,
Consumers' Ice & Coal Co.
Per D. F. [illegible] Mgr.

"THE TOOL STEEL MILL"
BRAEBURN STEEL COMPANY
BRANCH OF STANDARD STEEL AND BEARINGS INCORPORATED
CONTROLLED AND OPERATED BY MARLIN-ROCKWELL CORPORATION
OFFICE AND WORKS BRAEBURN, PA

May 21, 1920.

Mr. F. J. Straub,
New Kensington, Pa.

Dear Sir:-

Referring to the core baking oven which we have installed in our Plant, the sides and back wall of this furnace are built of your cinder block, 8 x 8 x 16, of the hollow type and has been in service from six weeks to two months.

The temperature in this furnace varies from 300 degrees to 600 degrees Fahrenheit. The furnace being heated by an open gas flame playing against the entire surface of both sides.

Our experience with this furnace leads us to believe that the heat resisting quality of this block is greater than brick inasmuch as we have a similar furnace built of red brick immediately next to the furnace built of cinder block.

Any further information you care to have we will be glad to give you.

Yours very truly,
BRAEBURN STEEL COMPANY,
Durrando Miller
General Superintendent.

DM/BRG.

WARREN A. MYERS, Vice Pres't
GEO. W. WINGER, Vice Pres't
JOHN L. RUSSELL, President
JOSEPH B. CARTWELL, Chairman of Board
INCORPORATED 1851. RE-ORGANIZED 1864.
NO 236
HARLEN C. WEST, Cashier
L. M. COOKE, Asst. Cashier

THE FIRST NATIONAL BANK
SPRINGFIELD, OHIO

The Springfield Cinder Block Co.,
C i t y.

April 30, 1923.

Gentlemen:-

I wish to recommend to those who contemplate building, the Cinder Block, made by your Company.

Two and one-half years ago I used these blocks in the construction of my stable and garage and they have proven most satisfactory. The stable is warm in winter and cool in summer and free from all moisture so that the horses keep in better health and condition than I have ever had them in any other building.

In regard to the garage they have proven equally satisfactory. The building is dry in all kinds of weather and warm in the winter and cool in summer. Besides, the blocks are fireproof and make an inexpensive wall.

My only regret is that I did not know anything about these blocks when I built my house. I certainly would have used them in place of hollow tile had I known anything about them when I made the contract for the house.

I shall be glad at any time to tell any of your prospective buyers some of the good points of the blocks should they desire to confer with me.

Sincerely yours,

AFFILIATED WITH
THE AMERICAN TRUST & SAVINGS BANK
SPRINGFIELD, OHIO

"—An 8" cinder block wall would more than carry the load."

M. L. FOGEL, PRESIDENT L. L. FOGEL, SECRETARY PAUL M. FOGEL, VICE PRES. AND MGR.

FOGEL CONSTRUCTION COMPANY
GENERAL CONTRACTORS
617-18-19-20 RELIANCE BUILDING

PHONE 6532 HARRISON
PHONE 6533 HARRISON

KANSAS CITY, MO., Dec., 27th.. 4 192

Crozier-Straub Inc.,
Mr. G. Edgar Allen,
120 West 42nd., St.,
New York City.

Dear Sir:-

In keeping the costs in the use of cinder blocks on our different jobs, we have found that we can save about 10% for plastering on cinder block over good hollow tile. There is also a saving of at least 50% on labor in placing grounds on cinder block partitions over any other partition material used.

Comparing the cost of building a 12" cinder block wall with a 12" brick wall, will say if common brick were $8.00 per thousand delivered on the job; we could build the wall with 8" x 12" x 16" cinder block as cheap as we could with the $8.00 per thousand brick.

Trusting this information will be of some value to you, I am.

Yours truly,
FOGEL CONSTRUCTION CO.,
By Paul M Fogel
Paul M. Fogel

REAL ESTATE BUILDER
INVESTMENTS INSURANCE

HARRY R. MILLER
140 LAFAYETTE BLVD.
DETROIT MICH.

CADILLAC 2100
MICHIGAN 8700

Friday, January 11, 1924.

Crozier-Straub, Inc.,
#120 W. 42nd Street,
New York City, N.Y.

ATTENTION MR. G. EDGAR ALLEN

Dear Mr. Allen,-

The Detroit Department of Building and Safety Engineering have given me a permit to build a one and one-half story cinder block dwelling on an 8" basement wall, with pilasters every 8 ft. The building code now calls for a 12" basement wall of brick or concrete block construction. This permits a wall 1/3 less in thickness, accomplishing a very great reduction in cost of material and labor.

I took this up personally with Mr. G. R. Thompson, chief Building Inspector, who said he was satisfied that an 8" cinder block wall would more than carry the load.

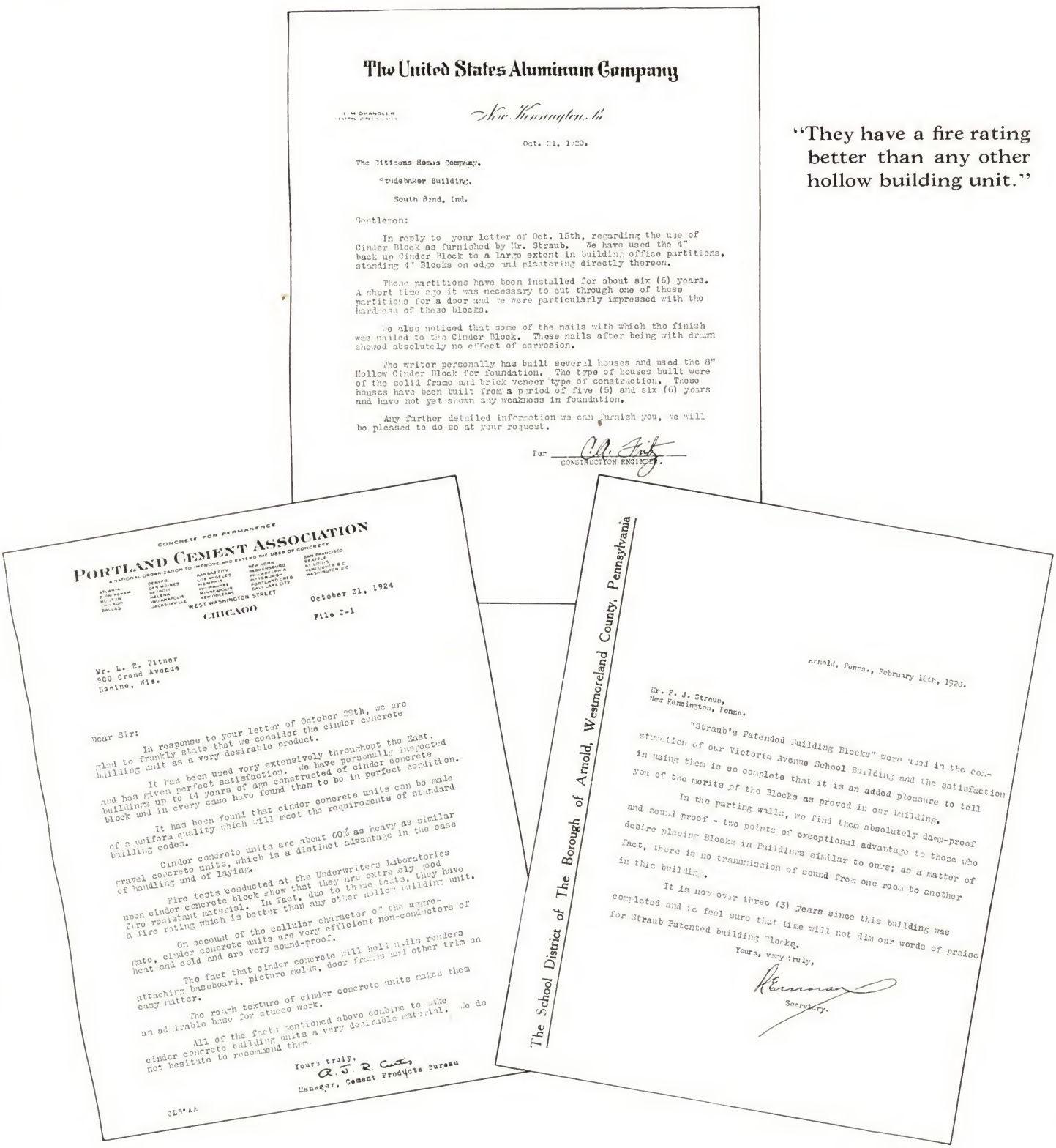
This is a wonderful recommendation for cinder blocks as a building material, not only for its superior quality but for its big saving in cost of material and labor, thus giving the public a better house for less money.

I have already broken ground for my first twenty-five houses and the Detroit Cinder Block and Tile Company are taking good care of me on delivery of blocks.

H/A

Very truly yours,
H. R. Miller

"They have a fire rating better than any other hollow building unit."



The United States Aluminum Company

J. M. CHANDLER
GENERAL MANAGER

New Kensington, Pa.

Oct. 21, 1920.

The Citizens Homes Company,
Studebaker Building,
South Bend, Ind.

Gentlemen:

In reply to your letter of Oct. 15th, regarding the use of Cinder Block as furnished by Mr. Straub. We have used the 4" back up Cinder Block to a large extent in building office partitions, standing 4" Blocks on edge and plastering directly thereon.

These partitions have been installed for about six (6) years. A short time ago it was necessary to cut through one of these partitions for a door and we were particularly impressed with the hardness of these blocks.

We also noticed that some of the nails with which the finish was nailed to the Cinder Block. These nails after being with drawn showed absolutely no effect of corrosion.

The writer personally has built several houses and used the 8" Hollow Cinder Block for foundation. The type of houses built were of the solid frame and brick veneer type of construction. These houses have been built from a period of five (5) and six (6) years and have not yet shown any weakness in foundation.

Any further detailed information we can furnish you, we will be pleased to do so at your request.

For _____
CONSTRUCTION ENGINEER.

CONCRETE FOR PERMANENCE

PORTLAND CEMENT ASSOCIATION

A NATIONAL ORGANIZATION TO IMPROVE AND EXTEND THE USES OF CONCRETE

ATLANTA, BIRMINGHAM, BOSTON, CHICAGO, DALLAS, DENVER, DES MOINES, DETROIT, HELENA, INDIANAPOLIS, JACKSONVILLE, KANSAS CITY, LOS ANGELES, MEMPHIS, MILWAUKEE, MINNEAPOLIS, NEW ORLEANS, NEW YORK, HARRISBURG, PHILADELPHIA, PITTSBURGH, PORTLAND (ORE.), SALT LAKE CITY, SAN FRANCISCO, SEATTLE, ST. LOUIS, VANCOUVER, B.C., WASHINGTON, D.C.

WEST WASHINGTON STREET
CHICAGO

October 31, 1924

File 2-1

Mr. L. E. Pitner
600 Grand Avenue
Racine, Wis.

Dear Sir:

In response to your letter of October 29th, we are glad to frankly state that we consider the cinder concrete building unit as a very desirable product.

It has been used very extensively throughout the East, and has given perfect satisfaction. We have personally inspected buildings up to 14 years of age constructed of cinder concrete block and in every case have found them to be in perfect condition.

It has been found that cinder concrete units can be made of a uniform quality which will meet the requirements of standard building codes.

Cinder concrete units are about 60% as heavy as similar gravel concrete units, which is a distinct advantage in the case of handling and of laying.

Fire tests conducted at the Underwriters Laboratories upon cinder concrete block show that they are extremely good fire resistant material. In fact, due to these tests, they have a fire rating which is better than any other hollow building unit.

On account of the cellular character of the aggregate, cinder concrete units are very efficient non-conductors of heat and cold and are very sound-proof.

The fact that cinder concrete will hold nails renders attaching baseboard, picture molds, door frames and other trim an easy matter.

The rough texture of cinder concrete units makes them an admirable base for stucco work.

All of the facts mentioned above combine to make cinder concrete building units a very desirable material. We do not hesitate to recommend them.

Yours truly,
R. J. R. Cutler
Manager, Cement Products Bureau

CLB-AA

The School District of The Borough of Arnold, Westmoreland County, Pennsylvania

Arnold, Penna., February 10th, 1920.

Mr. F. J. Straub,
New Kensington, Penna.

"Straub's Patended Building Blocks" were used in the construction of our Victoria Avenue School Building and the satisfaction in using them is so complete that it is an added pleasure to tell you of the merits of the Blocks as proved in our building.

In the parting walls, we find them absolutely damp-proof and sound proof - two points of exceptional advantage to those who desire placing Blocks in Buildings similar to ours; as a matter of fact, there is no transmission of sound from one room to another in this building.

It is now over three (3) years since this building was completed and we feel sure that time will not dim our words of praise for Straub Patented building blocks.

Yours, very truly,

Secretary.

Stucco Finishes for Straub Block Houses

BECAUSE of the great variety of finishes possible, the use of stucco over Straub Block Walls enables every architect to select a surfacing that will be in keeping with the desired style of architecture and the taste of the owner.

The durability, permanent nature, and general adaptability of stucco makes it particularly suitable for houses of Straub Block construction.

The surface of the Straub Block affords a perfect bond for stucco finish and the combination of these two materials makes possible a well nigh perfect wall, both structurally and artistically.

Alfonso Iannelli, Professor of Design at the Chicago Art Institute, who has made an extensive research into the subject of Stucco, says:

"Good taste suggests the desirability of making the exterior wall finish conform with the general style of the residence. Modern materials and modern implements make this possible. For, subjected to the talent of the architect, stucco becomes a sensative medium through which the texture-and-tone qualities of each period can be expressed."

FRENCH BRUSH

A somewhat uneven surface reduced by hand rubbing.

COLONIAL

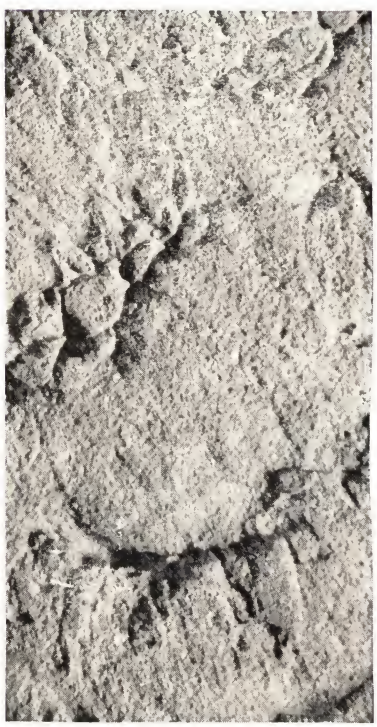
A sanded surface finished with a wood or cork float.

CALIFORNIA

A rough cast finish reduced by rubbing with a carpet-covered float.

ENGLISH

The irregularities are produced by side strokes of the trowel.



ITALIAN COTTAGE

A sponge finish developed on a soft plastic surface.

ITALIAN

The final coat is rough cast, then partially troweled smooth.

ENGLISH COTTAGE

The surface of the final coat is feathered with the back edge of the trowel.

FRENCH TROWEL

Broad sweeping strokes of the trowel result in this finish.

MODERN AMERICAN

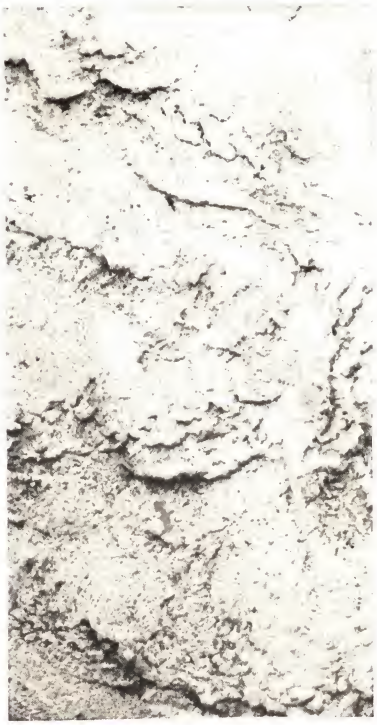
The edge of the float or trowel is used to roughen a smooth finish Slightly.

GOTHIC

A floated finish rough-torn with the back edge of the trowel.

GREEK

A trowel dash or float spotted.

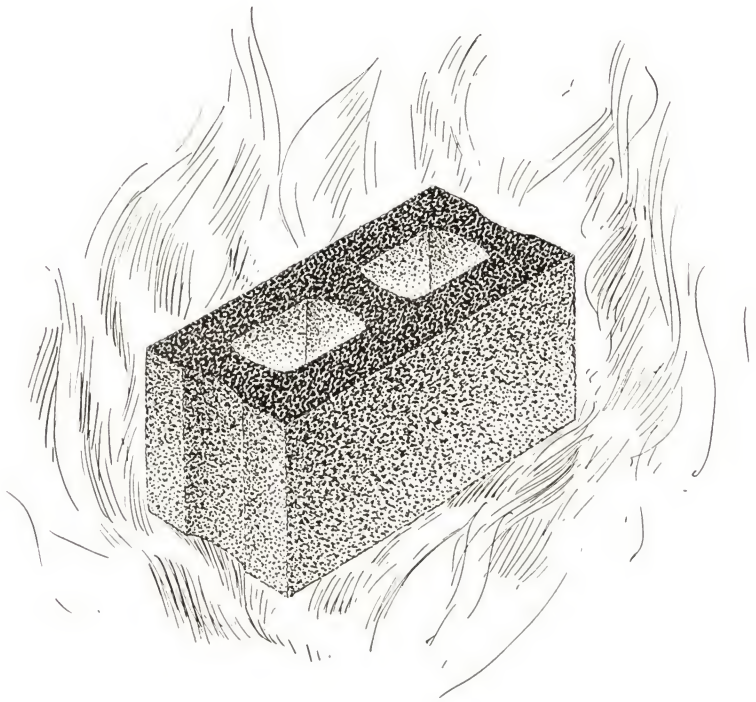


SPANISH

An irregular surface produced by feathering with a wood float.

Used by courtesy of Portland Cement Association.

FIRE PROTECTION



A hollow 5-inch wall of Straub Cinder Concrete Blocks Saved Tenafly

ONE of the most remarkable incidents in the history of fire occurred in December, 1924, at the Tenafly, N. J. conflagration.

The bleak early darkness of winter afternoon was incarnadined with lurid light, the intense cold transmuted into scorching heat, and the fire, goaded forward by a thirty-five mile gale, stretched flaming talons toward the town.

Two buildings, the great old frame barn and warehouse of Taveniere & Johnson, and the office building that adjoined it, were blazing. Six blocks away embers were falling, carried by the western gale. Two blocks away a Church caught fire. Seven fire companies, responding to emergency calls, fought to localize the danger.

But the warehouse and office building were doomed. Roofs across the street were catching flame. The heat was overwhelming. There was but one hope of staying a general conflagration. But a few feet away, the west wall of the Washington Apartments, rose three stories in height and five inches in thickness—five inches of Hollow Straub Cinder Concrete Block between Tenafly and the fire!

Great billows of flame swept the wall's surface. So intense was the heat that the firemen experienced great difficulty in overcoming the blaze. Five hundred gallons of icy water a minute roared against the wall, hurled from each fire hose.

Icy-cold and red-hot—contraction and expansion in their most extreme form, throwing their united powers against a five inch wall, tied to its interior framework only by sheet metal clips, and from foundation up supporting its own weight. And for three and one-half hours the Straub Block walls of the Washington Apartments were subjected to this supreme test.

The wall held. Straub Blocks saved Tenafly. And after such an ordeal as is seldom recorded, the wall stood straight as a plumb line, undeflected, uncracked, and without a sign of heat penetration.

The New Jersey State Tenement House Commission, sealing the choice of owner and architect for a 5" Hollow Straub Cinder Concrete Wall for fire protection, approved this material.

The wisdom of this approval is now overwhelmingly manifested. The results of the fire at Tenafly are of such interest and importance to authorities on building construction and Insurance Underwriters that the site has been visited and the details inspected by numbers of experts, builders and

architects from various boroughs of the Metropolitan District of New York.

Further, the wall of the Washington Apartments was not the only piece of masonry to testify to tremendous strength and endurance of Straub Blocks. The gutted office building, its interior destroyed by the fire that penetrated its wooden rear walls, also possessed side walls of 12″ and 8″ Straub Block, two of which were wings, unsupported at one end. Against the east wall of this office building, as against the west wall of the Washington Apartments, the fire strove for three and one-half hours, and both wing walls, unsupported, one of them pierced with five openings, stood staunch against the impact of many tons of water.

Not a single unit was displaced in any of the Straub Block walls, and not a single crack or fracture developed as the result of these extremes of temperature.

More significant still, in the store next adjoining the office building the plaster, applied directly to the blocks and only twelve inches away from these extremes of heat and cold, shows no sign of the fury that raged on the other side of the wall. There are no signs of heat penetration on the other side of any of these Straub Block barriers. Charred surfaces are confined to sash and door openings.

An interesting fact that further illustrates the tenacity of the walls was revealed in the entire absence of fractures, even where girders and joists tore themselves loose from the walls. Where framework had been nailed directly to the blocks in the window openings, the wood has been torn or burned away, leaving the nails imbedded in the block.

Building experts and Fire Chiefs present at the fire, and basing their judgment upon experience with other masonry materials, predicted at the height of the conflagration that the walls of the Washington Apartments could not be expected to withstand the intensity of the strain, and that this building would be destroyed, and with it the entire business district directly in the path of the flames.

But every Straub Block in these walls is perfect, and fit for use again. Struck with a hammer, every one rings true.

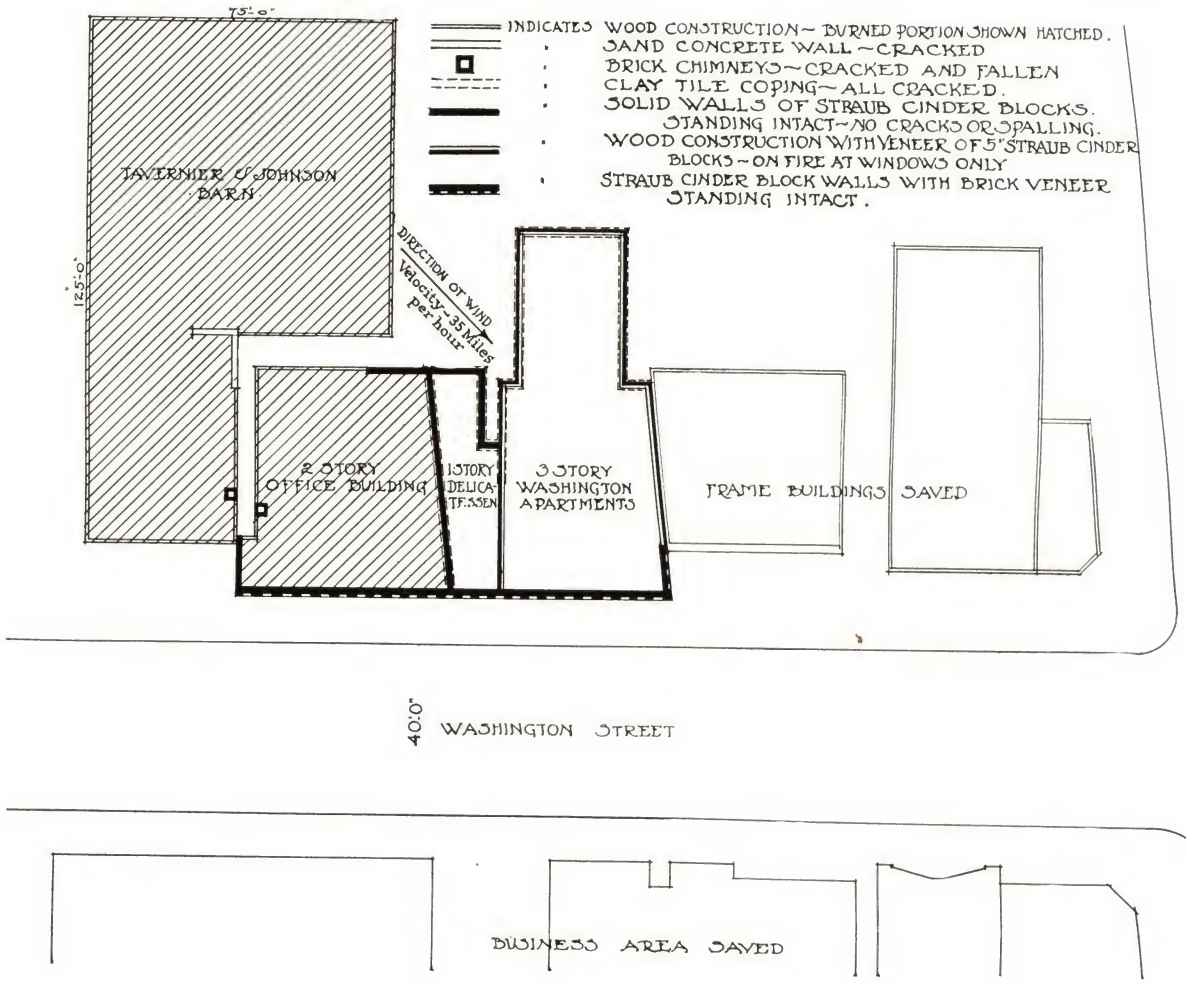
Their duplicates are obtainable from the more than fifty plants manufacturing under Straub Patents, listed in this book.

Facts the Fire Exposed

The results of this conflagration have proven beyond any doubt that Cinder Concrete Blocks manufactured under the Straub Process have the following points of superiority over any mason material commonly used for general building construction.

1. Extraordinary insulative value.
2. Stubborn resistance to flame under extreme temperature.
3. Absence of fracture under extremes of temperatures.
4. A load bearing wall that will not bulge or deflect under temperature extremes, including those of freezing and thawing.
5. A tenacity in the mortar joints sufficient to prevent the dislodgment of units under heavy impact and extremes of temperature.
6. Resistance of a bearing wall twenty feet high, twenty feet wide, pierced with five openings, to the lateral thrust of falling girders and the impact of fire streams, although unsupported on one end.
7. The only mason material in the fire that did not show fractures resulting from extremes of temperature.
8. Salvage value was 100%, therefore, the best mason material for any owner to use, irrespective of cost, and the least expensive from the point of view of the underwriters.

The same qualities that made the unique record at the Tenafly Fire are built into every Straub Patented Building Block made under the Straub Patents and Process.



The above diagram illustrates the position of the various buildings in the fire area, together with the position of the business section of Tenafly relative to this area.

The results of the Tenafly fire are of interest to everyone engaged in building construction. Among the many authorities who visited the fire were Mr. Rudolph P. Miller, the author of New York's Building Code, and Consulting Engineer of the Borough of Manhattan, and Mr. E. B. Hopwood, who adjusted the fire loss for the United States Insurance Company. Both of these specialists were so impressed by the resistance of the Straub Block Walls that they made inspections on several different occasions.

OFFICIAL TESTS

STRAUB Cinder Building BLOCKS

W. H. MERRILL, PRESIDENT
W. C. ROBINSON, DANA PIERCE, A. R. SMALL } VICE PRESIDENTS
D. B. ANDERSON, SECRETARY
L. B. HEADEN, TREASURER

CHICAGO, 207 E. OHIO ST.
NEW YORK, 25 CITY HALL PLACE
BOSTON, 87 MILK ST.
PITTSBURGH, 324 FOURTH AVE.
AGENCIES IN ALL PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

Underwriters' Laboratories
INCORPORATED 1901
ESTABLISHED AND MAINTAINED BY THE
National Board of Fire Underwriters
FOR SERVICE - NOT PROFIT

207 EAST OHIO STREET, CHICAGO

Retardant No. 1429
July 10, 1922

Report on HOLLOW CINDER CONCRETE BUILDING BLOCKS

PLAN OF INVESTIGATION

The object of the investigation was primarily to ascertain the fire retardant properties of Straub Blocks as employed in the construction of walls. The tests which afforded information relating to fire resistance of the material were supplemented by other tests and examinations intended to show the composition of the material and to afford data for purposes of identification; the compressive strength of the blocks; the effects of saturation with water and subsequent freezing and thawing; the practicability of handling and shipping the blocks; the procedure to be followed in constructing a wall; the effect of the application of a hose stream to a specimen wall that had been exposed to fire; and the effect of a falling beam or column upon the same specimen wall.

EXAMINATION AND TEST RECORD
EXAMINATION OF MATERIALS

Description of Samples. The sample employed in this examination comprised specimens of crushed cinders and a half-carload shipment of approximately 700 blocks from the plant of the York Patented Building Block Company.

Method. The ground cinders were examined visually and the fineness of grinding was determined by means of sieves with graduated sizes of mesh. Chemical analyses were made to determine the total sulphur content and the amount of unburned coal and coke.

The blocks were inspected to determine whether they had incurred damage in shipment from York, Pa., to Chicago and at Underwriters' Laboratories after the blocks had been delivered by truck.

The blocks were examined to afford information regarding their general appearance and texture, their weights and their dimensions.

Results. The cinders, which were stated to be ordinary run-of-boiler product, resulting from the more or less complete burning of soft coal, were a mixture of material of varying grades of fineness, ranging from dust that would pass a 100-mesh sieve to pieces that would just pass a 3/8-in. screen. Approximately 40 percent by weight passed a 20-mesh screen. The presence of a considerable amount of unburned carbon was apparent on visual examination. Chemical analysis showed the presence of sulphur amounting to about 0.7 percent of the dry weight of the cinders, and of coal and coke amounting to between 18 and 19 percent.

The 700 blocks examined in a Chicago freight house after shipment from York, Pa., were undamaged, except as follows:—One block broken into two pieces, 10 blocks, each with one or more corners chipped. After delivery by truck at Underwriters' Laboratories, 10 additional blocks were found to be damaged slightly at their corners.

The blocks were of a dull, slate-gray color, and of the rough, pitted texture characteristic of lean cinder concrete. The particles of cinder aggregate appeared to be completely covered by the cement. Rough handling of the dry blocks caused the separation of small particles from the surfaces, but no ordinary rough usage caused breakage.

Nails were driven into the blocks without difficulty, and without causing spalling, chipping or cracking.

The average gross cross sectional area of the standard blocks was approximately 128 sq. in.; the net sectional area approximately 94 sq. in; the ratio of air space to gross area was about 27 percent.

The corresponding values for the half blocks were approximately 64 sq. in; 51 sq. in.; and 20 percent respectively.

INSTALLATION TESTS

Method. The tests comprised the erection of two panels, each 10 ft. wide by 11 ft. high, in movable front walls of Underwriters' Laboratories' Furnace No. 2.

The blocks were laid by the submittor, Mr. F. J. Straub, who is an experienced bricklayer. He was assisted by two helpers from the Laboratories' plant force.

Results. One panel was completed in 2 hr., 30 min., and the other in 2 hr., 33 min; this time not including that required for erecting scaffolding. All blocks were laid with cells vertical and with joints broken, only full-sized and half-size blocks being used. Blocks which did not fit snugly were trimmed with a small hatchet. The mortar was made with one part of portland cement and three parts of lake sand, with about eight percent of slaked lime, all measurements being by volume. Enough water was employed to make a thin mortar. In laying the blocks no mortar was applied to the webs, and no special effort was made to apply mortar uniformly. Joints which were apparently not well formed were subsequently smoothed. No difficulty was experienced in handling and setting the blocks, using the tools and the methods ordinarily employed by bricklayers.

The appearance of the completed panels is illustrated by Figs. 1, 2, and 3.

FIRE ENDURANCE TEST

Description of Sample. The test was made on one of the two panels described under the heading Installation Tests, the panel being 28 days old. The sample was 10 ft. 1 in. wide by 11 ft. 3 in. high. No openings were apparent at the edges or elsewhere, and no cracks could be observed. The general appearance was that of a wall built without special attention to neat appearance of joints, but probably representing the average conditions in in-

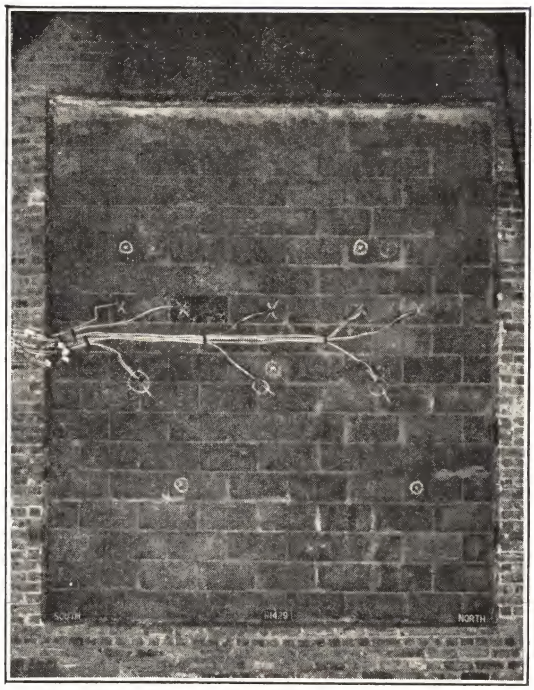


Fig. 1
Unexposed face of wall before test

stallations where speed in erection is desired.

Method. Underwriters' Laboratories' standard test equipment was used.

The five thermocouples were installed on a horizontal plane 16 in. above the center of the panel, each tip being within a cell and capable of being moved so as to indicate the temperature at the center of the cell or the temperature on the inner surface of the exposed wall of a particular block. Three thermocouples were installed slightly below the horizontal center line with their tips embedded in the mortar joints, approximately 1½ in. from the exposed face of the panel.

The wall carrying the test panel was drawn into position as the front wall of the furnace and the fire started. The exposed face of the panel was subjected to standardized fire conditions in which the temperatures rise rapidly to 1500° F. during the first 30 min., to approximately 1700° in 1 hr., and continued to rise gradually until the end of the test.

The test was continued 3 hr. 42 min. after which time the fire was extinguished and the test panel immediately drawn away from the furnace and allowed to cool.

Throughout the test and after its conclusion observations were made regarding the character of the fire, the temperatures and deflections of the sample, and all developments having any relation to its flame retardance, its heat insulation and its stability.

RESULTS

Observations During Test. The distribution of the fire was rather irregular during the first hour, but was uniform in the later portions of the test. The panel showed color unevenly in patches within 10 min., the patches increasing in size and brightness until at the end of the test the exposed face was uniformly bright red. Between 5 and 10 min. small glowing particles were thrown off from the exposed face. No spalling and no craking occurred during the test.

On the unexposed face, at 12 min. steam issued at the upper edge of the panel and at several vertical joints between blocks in the upper half of the panel. At 25 min. steam issued from joints in the lower half. The issuance of steam continued for approximately two hours. At 25 min. the upper half was slightly warm to the touch; at 35 min. the lower half. At 2 hr., 15 min. incandescent material could be seen by looking into two vertical joints. After 3 hours a similar appearance was observed at four additional vertical joints.

The panel bulged slightly and uniformly toward the fire, the maximum bulging on the vertical center line at the end of the test being ½ in.

On the unexposed face, one thermometer indicated 300° F. at 2 hr. 58 min. The average reading of five thermometers reached 300° F. at 3 hr. 15 min. After the furnace fire was extinguished at 3 hr. 42 min. and the panel was withdrawn, the temperatures on the unexposed face continued to increase to a maximum of 500° F. in 4 hr. 20 min.

Observations After Test. At the end of the test, and after complete cooling, the panel showed no cracking, spalling or other structural damage. After cooling, the exposed side was of a brown color, with numerous black dots.

The appearance of the panel after the test is illustrated in Figs. 2 and 3.

Fig. 2
Exposed face of wall after test

FIRE AND HOSE STREAM TEST

Description of Sample. The test was made on one of the two panels described under the heading, "Installation Tests", the panel being a duplicate of that subjected to the Fire Endurance Test. It was 29 days old.

Method. Underwriters' Laboratories' standard test equipment was used.

The sample was subjected to the standard fire test for 60 min; it was then drawn away from the furnace and a 2½ in. hose stream from a 1⅛ in. nozzle was applied to the heated face for 5 min.

The stream was applied from a position 20 ft. distant and opposite the center of the panel. It was directed first at the center and then at all parts

of the exposed face, changes in the direction of the stream being made slowly. The pressure at the base of the nozzle was 50 lbs.

During exposure to fire the usual observations were made. After the application of the hose stream observations were made to determine the condition of the materials resulting from the impact, pressure and rapid cooling due to the stream.

RESULTS

Observations During Test. The distribution of the fire was somewhat irregular and variable during the greater part of the test, but was uniform at the end of 60 min. In 3 min. small jets of burning gas came from the side exposed to fire and in 5 min. small glowing particles were observed on various portions of this face. Slight color developed in the central portion in 10 min. and all parts of the sample except the south 3 ft. were a fairly uniform dull red, the color increasing gradually until the end of the test.

No spalling, cracking, or other structural damage was observed on either face.

Observations After Test. After the application of the hose stream the panel was still in position, no blocks having been displaced, and none showing any cracking or spalling or any damage other than erosion. The maximum amount of erosion occurred slightly above the horizontal center line and about 3 ft. from the north edge, where on two blocks the material had been washed away to a depth of 1 in. The erosion was rather general, but not uniform in the north three quarters; only slight damage of this sort was observed in the south quarter. The stream washed away some of the mortar in the joints at all parts of the exposed face, forming a through opening ¼ in. wide and 8 in. long between two blocks in the north quarter. No other through openings were formed.

Fig. 3
Unexposed face of wall after test

IMPACT TEST

Description of Sample. The test was made upon the panel that had already been subjected to the Fire and Hose Stream Test, the sample having been undisturbed for 6 days after that test.

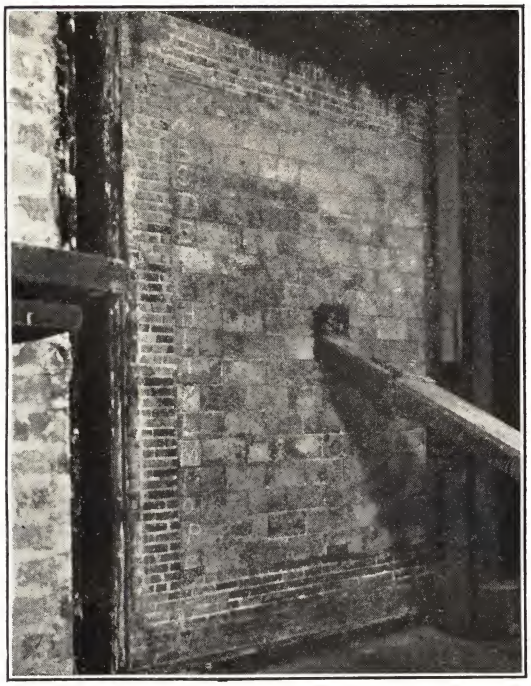


Fig. 4

Method. The movable wall carrying the test panel was blocked so that it could not swing, and was twice subjected to the impact of a steel and concrete member 16 ft. 6 in. long, mounted vertically on a hinge base, and designed so that when released it would swing in a vertical arc with its hinged base as a center, the upper end of the member striking the test panel at about its middle point. Fig. 4 illustrates the appearance of the upper portion of the swinging member and indicates its position at the moment of contact with the panel. The weight of the member was approximately 2500 lb. Its original distance from the panel was approximately 14 ft. The general effect of the test was intended to be representative of the effect of structural members falling against a wall during or after a fire.

For purposes of identification each course of blocks was designated by a letter as shown in Fig. 4. In each course the individual blocks were numbered from north to south.

Results. The effect of the first impact is shown in Figs. 4 and 5. The end of the swinging member struck the panel midway of Course G. It ruptured blocks locally so that a through opening was formed about 20 in. high and with width equal to the width of the swinging member, or 15 in. In the immediate neighborhood of the through opening other blocks were damaged as shown in Fig. 5. In all 9 blocks were injured to a greater or less extent. No other blocks were affected and the stability of the wall as a whole was apparently not impaired.

The second impact enlarged the damaged portions so that on the exposed face it involved a total of 3 courses in height and 16 to 18 in. in width, the damaged portion on the unexposed face being 8 courses high and about 2 ft. wide. No damage was done to blocks not immediately adjacent to the main ruptured portion and the stability of the wall as a whole was apparently not impaired.

CONCLUSIONS

Fire Retardant Properties. Straub cinder concrete blocks constructed of the materials and by the methods described in this report, can be employed for the construction of exterior or interior

Fig. 5

walls, bearing or non-bearing, which when exposed to fire on either side will prevent the passage of flame through the wall and function as a barrier to the spread of fire by heat conduction for at least 2½ hours. Application of a hose stream to either side of the wall during the first hour of fire exposure will not seriously impair its fire resistance.

No flame passage occurred during the Fire Endurance Test and no through openings were found. The critical temperature of 300° F. was reached on the unexposed face at 2 hr. 58 min.

Practicability. The blocks may be shipped in bulk without material injury. They may be handled without difficulty and installed rapidly by any competent bricklayer using ordinary tools.

In a half-carload shipment of the blocks from York, Pa., to a Chicago freight house, and thence by truck to the Laboratories, the amount of damage to the blocks was negligible.

Each of the two 10 by 11-ft. test walls erected at the Laboratories was completed in about 2½ hours.

Durability. The blocks are capable of withstanding long-continued exposure to weather conditions without material deviation.

Specimen blocks were subjected to a rather extensive series of tests involving saturation, freezing, thawing and drying. No visible deterioration was caused by any of these tests. Compression tests made of the blocks subjected five times to saturation, freezing and thawing, and then three times to saturation and drying, showed an average crushing strength of 750 lb. per sq. in. and a minimum of 580 lb. per sq. in. of the gross sectional area. These values may be compared with the average of 815 lb. per sq. in. and the minimum of 650 lb. per sq. in. the case of blocks that had not been saturated. It is believed that these differences are not significant in view of the characteristic variations in compressive strength commonly shown by tests of concrete products.

Strength. The strength of the blocks is sufficient to warrant their use in bearing or non-bearing walls, within the limitations commonly recognized as applying to materials of this character.

In general concrete blocks are considered suitable only for buildings of moderate height and with types of floor construction and of occupancy that will impose loads on the wall well within safe limits for Straub Blocks.

It is believed that there is not thus far any generally accepted specification regarding the crushing strength of cinder concrete blocks. The building Code recommended by the National Board of Fire Underwriters' states that "the average compressive strength for concrete blocks when tested with the cells vertical, shall be not less than 800 lb. per sq. in." The blocks forming the subject of this report had an average crushing strength of 815 lb. per sq. in.

The effects of the Impact Test were purely local.

Uniformity. The blocks can be produced commercially with the degree of uniformity sufficient for the purposes for which the material is intended.

The dimensions of the blocks are determined by the dimensions of the forms in which they are cast. The density and the compressive strength are subjected to variation within rather wide limits. In the case of the blocks employed in the examinations and tests described in this report, all being the product of the same plant, examination of 12 blocks showed weights varying from 16 to 25 per cent. Compression tests showed ultimate crushing strength varying from 650 to 1140 lb. per sq. in. of gross sectional area. The cinders employed in the mixing of the concrete were of rather inferior grade with 18 to 19 percent combustible material, the presence of unburned coal or coke being evident on visual examination. Approximately 40 percent by weight of the cinders passed a 20-mesh sieve. The results of the tests made on blocks employing this inferior aggregate and a rather small proportion of cement, were so favorable, notwithstanding the variation in some important properties, as to justify the opinion that the variations noted are within permissable limits.

RECOMMENDATION

To the Fire Council of Underwriters' Laboratories. We recommend promulgation to subscribers of notice in the following form and the action indicated thereby, whenever the product of any particular factory manufacturing Straub Blocks is shown by Laboratories' tests and investigations to be equivalent to the product whose properties are described in this report.

Guide No. 40 UM2, July 10, 1922—Laboratories' File R. 1429.

Straub Cinder Concrete Building Blocks

John Doe, Mfr.,
Address.

Hollow pattern supplied in following nominal or trade sizes 8 by 8 by 16 in; 8 by 8 by 8 in. Solid pattern supplied in 4 by 8 by 16 in. size.

Eight-inch exterior and interior walls or partitions bearing or non-bearing, constructed of these blocks laid in Portland cement mortar, have a fire retardant classification of R2-½hr.

Listed—Fire.

Re-examination Service. See description of Re-examination Service on guide card.

Tests and report by: Respectfully submitted,

Fitzhugh Taylor
J. B. Finnegan
M. J. O'Brien
C. H. Pierson
A. E. Maitre.

J. B. FINNEGAN,
Associate Engineer.

The foregoing recommendation has been accepted and the action proposed therein has been taken, September 12, 1922.

UNDERWRITERS' LABORATORIES.
D. B. ANDERSON, Secretary.

NOTE.—The above is a condensed report of the National Board of Fire Underwriters. The complete report may be obtained by application to any plant operating under Straub patents.

OHIO STATE UNIVERSITY TEST

Heavy Test Loads on Hollow Cinder Block Floor Slabs Cause Slight Permanent Deflection.

Tests conducted on three hollow cinder block floors constructed in a manner similar to what is spoken of as hollow tile construction, with hollow cinder block occupying the same position that the terra-cotta tile does, resulted in slight permanent deflection in the slabs under loading much in excess of the computed allowable live loads. The tests illustrated in the accompanying figures were made by J. R. Shank, professor of civil engineering, Ohio State University, on test floors poured December 15, 1923, inside of one of the buildings of the Indianapolis Switch & Frog Co., at Springfield, Ohio. The tests were made to determine the strength of slabs constructed according to the McIlroy fireproof floor system, invented by William McIlroy, Springfield, Ohio.

A few advantages of the hollow cinder block floors are cited by Mr. McIlroy as follows: Minimum simple forms; if forms are level, no other leveling is necessary, as the blocks are all true to size and shape and do not warp; sleepers can be nailed into the blocks with ordinary nails before the beams are poured; no cinder fill required; less plaster on ceiling and no lath; fixtures, shafting or suspended ceiling can be fastened to the underside with ordinary nails, screws or lags and they will hold; from 24 to 40 lb. dead weight per sq. ft., can be eliminated, and more live load carried at less cost than any other fireproof floor; it is a better fire and water resistant, sound deadener and insulator, and has splendid acoustic qualities, as proved in buildings erected by the inventor.

In the case of the test floors, the cinder blocks were placed with their ends supported on planks which formed the bottom forms for the reinforced concrete beams. The ends of the cinder blocks acted as the side forms for the reinforced concrete beams. Fig. 1 shows the test floor No. II ready for the test load. Fig. 3 shows the under side of this test floor after it had been tested. Fig. 3 also shows a sectional diagram illustrating the arrangement of the cinder blocks with respect to the concrete beams.

The concrete work on these test slabs was done in the usual manner employed in building construction. No extra effort was exerted to have a laboratory concrete or even a good grade of construction concrete. A slump test, according to the methods suggested by the American Society for Testing Materials and the material going into test floor No. III. gave a slump of 8 in., indicating a wet consistency. Concrete in test floor No. II had a slump of 5½ in.

The proportions used were 1:2:4; the sand used being a local sand, well graded but somewhat dirty, and the gravel being graded rather fine, much of it ranging between ¼ in. and ½ in., with considerable sand between ⅛ in and ¼ in. The maximum size was ¾ in. A standard brand of cement was used, and the steel reinforcing was of mild billet steel such as ordinarily used for reinforcing concrete.

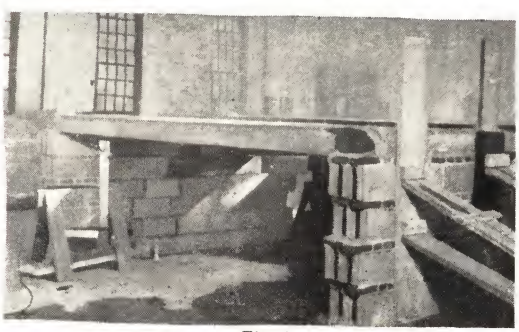


Fig. 1
Test floor No. II ready for test load

Fig. 2 Floor No. II under test

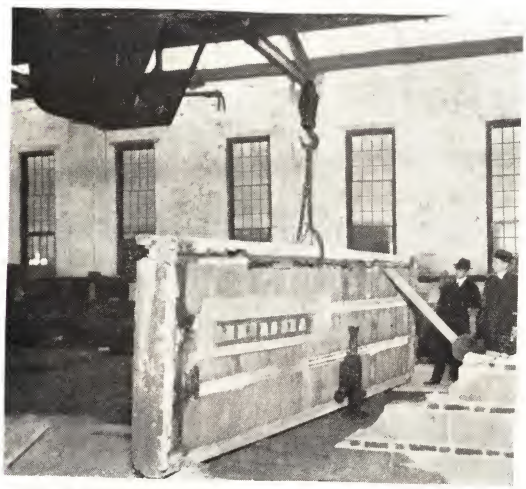


Fig. 3 The same test floor with sectional diagram showing arrangement of the block and concrete beams

Fig. 4 The break in the block which resulted from bond between the concrete and cinder block

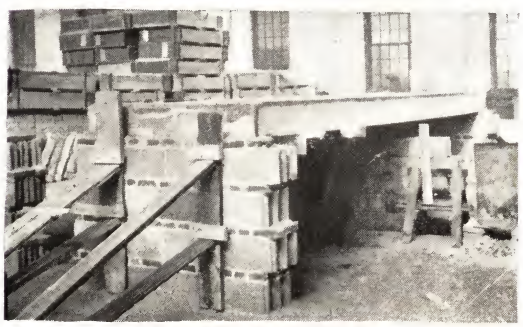


Fig. 5 Test floor No. I

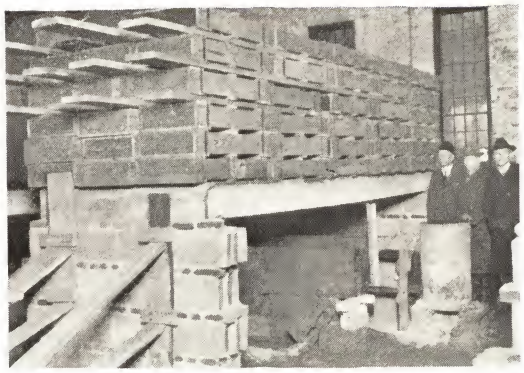


Fig. 6
Test floor No. I

Fig. 7
Test floor No. I

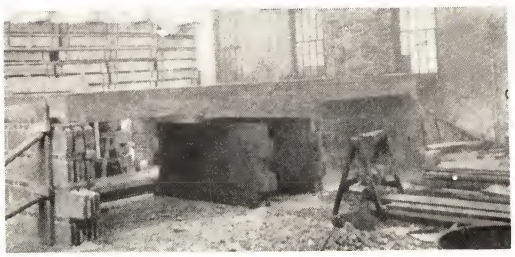


Fig. 8
Test floor No. III

Fig. 9
Test floor No. III showing the beam unbroken under load of 63,000 pounds

A test cylinder, 6 in. in diameter by 12 in., was made from the concrete going into each floor. These cylinders were made in steel forms and were stored with the test floors from the time of pouring until the date immediately preceding the breaking. At the time of making the test floors, two blocks of concrete were poured from the material in test floor No. II, using one of the cinder block as forms. These two block were broken on the same date as the test cylinders poured in the steel forms, the object being to see if cinder block had any effect on the strength of the adjoining concrete. All test cylinders were broken at Brown Hall, Ohio State University, and showed rather wide variation, although the appearance of the concrete as it went into the forms did not change much. The concrete was made dryer as the work progressed. The variation in water content, as evidenced by the slump of 8 in. for floor No. III and 5½ in. for No. II, showed up in the test results in the accompanying table.

6 in. Dia. x 12 in. cylinders	Test Load lbs.	Unit Strength lb. per sq. in.
From test floor No. I.....	71,600	2,530
From test floor No. II.....	47,400	1,675
From test floor No. III.....	36,300	1,282
		Av. 1,829
Concrete from test floor		
No. II, Molded in cin. block.	36,580	2,205
Cross-section 16.57 sq. in....	38,100	2,300
		Av. 2,252
Concrete Block		
126.5 sq. in. gross.....	121,150	960
91.8 sq. in. net.....	121,150	1,320

It is stated in the report that the increase in the strength of concrete poured into the cinder block mold over that of the same batch poured into the steel mold probably explains some of the high strength attained by the floors. Apparently the cinder block took up considerable of the excess water. It was noted during the pouring that there was no water drip under the floor, the cinder block absorbing all the excess water. In removing the cinder block mold from the test pieces molded in them, the toughness of the cinder block was noted. A cold chisel could be driven into the cinder concrete an inch or more before the wedge action would split off a portion. This bond to the cinder concrete is more clearly shown in Figs. 3 and 4. When removing the test floor No. II after it had been loaded, a hole was made through one of the cinder blocks through which a chain was passed. The test floor was lifted bodily and carried 2 or 3 ft. when the break formed, as shown in Fig. 4.

The test floors and compression specimens were allowed to set and harden a longer time than 28 days on account of the coldness of the weather. The test floors were covered over with planks and shavings during the setting period, but there was no artificial heat applied. The salamanders were placed only the night before tests were conducted to make it more comfortable for the spectators. The temperature at times registered below zero.

TEST FLOOR NO. II

Test floor No. II was made up of four rectangular beams with cinder blocks between. Details of construction are shown in Fig. 10. The material used for the loading was welding iron crated for shipment in crates whose total weight was 525 lb. The crates were laid as shown in Fig. 2. Deflections were measured from a hook driven into the under part of the cinder block at the middle of the span to a brass wire tightly stretched from a support off one side of the test floor to another on the other side just under the hook. The wall under the test floor near the center was placed as a protection feature, not being in contact with the test floor at any time.

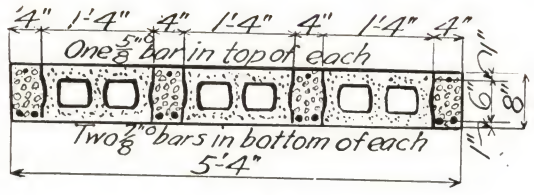


Fig. 10

Cross Section of Test Floor No. II

The clear span between supports was 15 ft. The end supporting walls were 13 in. thick and the loading was placed out nearly to the backs of the supporting walls.

The load actually placed on the test floor amounted to 19,950 lb. with the 8 men added at 160 lb. each, the total load would be 21,230 lb. Reduced to an equivalent uniform load based on the bending moments at the center, the loading would be, without including the men, 1,657 lb. per lin. ft. which would be 311 lb. per sq. ft. The total load per lin. ft., including the dead load was 370 lb. per sq. ft. producing a bending moment of 57,100 lb. ft. which is 360% of the computed working resisting moment, using n as 15 in the straight line formula and considering the top steel in compression. The excellent bond between the cinder blocks and the concrete, evidently caused the blocks to furnish added strength to the concrete beams in resisting the bending.

The maximum deflection under various degrees of loading was 0.856 in. A deflection of 1 in 360 occurred at an equivalant uniform loading of 1,045 lb. per lin. ft. or 196 lb. per sq. ft. which is 350% in excess of the computed allowable live load. After the live load had all been taken off, a permanent deflection of about 1/10 of an inch remained.

TESTS OF FLOOR No. I

Floor No. I shown in Figs. 5, 6 and 7 and in detail in Fig. 11 was of the T-beam style of construction with wood sleepers placed above the middle of each row of cinder block which would be used in construction to carry the floor. The same kind of cinder block were used as in test floor No. II, making the test floor 8 in. x 2 in. with a width of Tee of 13¾ in. and a thickness of 2 in. The material used for loading was, in general, the same as in test floor No. II. The deflections were measured in the same manner as for test floor No. II and two protection walls were placed under the slab as it was intended to break this floor. It was not possible to load this floor to destruction as the crane would not lift any higher than the top row of crates shown in Fig. 7.

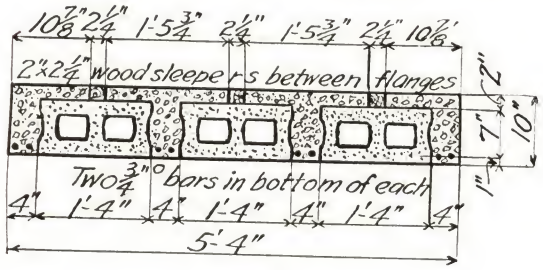


Fig. 11

Cross Section of Test Floor No. I

The spans used were 15 ft. 8 in., being the distance from center to center of end concrete pieces. The end supporting walls appeared to stay with the test floor during its deflection. The load that was actually placed on the test floor after making all proper deduction was 60,000 lb. The uniform load per lin. ft. on this basis would be 3,830 ft. lb. or load per sq. ft. of 719 lb. This is 495% of the computed allowable live load. If the dead load bending moment be added to that of the actually loaded live load, the result would be a total of 130,850 ft. lb. or 354% of the resisting moment computed on the basis of 700 lb. per sq. in. on the concrete.

The maximum fibre stress on the concrete would be approximately, 1,950 lb. per sq. in., computed according to parabolic variation. The stress shown in the test cylinder made from the same material as this test floor was 2,530 lb. per sq. in. and the average of the three was 1,829. This test floor was designed without any excess steel in the bottom. The fibre stress in this steel, as is usually computed, would run over 50,000 per sq. in. This seems to indicate a rather unusual assistance being given to the tension steel. The cracks which formed under the heavy loading were always at the joints between the cinder block, which tends to show that the cinder block did assist at least between these joints.

The total deflection for this test floor was 0.900 in. It was impossible to finish loading the test floor on the date started on account of lack of time. The load which showed a deflection of 0.5 in. was allowed to stand for the entire week and the remainder of the loading was done one week later. The total deflection on Feb. 2, the later date, was 0.628 in., showing a settlement of 0.218 in. due to flow in the concrete. When all of the live load was removed the beam came back ⅝ in. This made a permanent set of .275 in. with the flow. If the flow be deducted the comeback would be .147 or a little over ⅛ in.

TEST FLOOR NO. III.

Test floor No. III is shown in Figs. 8 and 9 and in detail in Fig. 12. The depth of the beam is 12 in., the width of each rectangular beam 5 in. and the clear span 20 ft., the width of each block being 16 in. The block contained some sand as is demanded at Detroit where the block were made. These block were brought in from the outside because 12-in. cinder block were not available locally at the time.

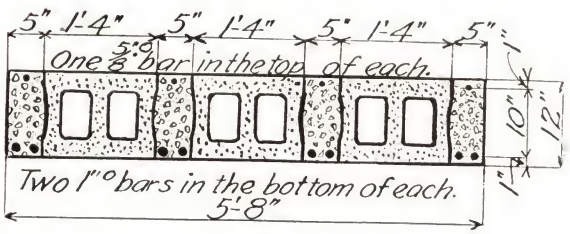


Fig. 12

Cross Section of Test Floor No. III

There were also ¼-in. round continuous stirrups used with verticals spaced 6½ in. from the end of the clear span, then 14 in., then 15 in. at each end and in all rectangular beams. The working span was taken as 20 ft. 8 in.

The load that was actually placed on the test floor both dead and live load, was 3,276 lb. per lin. ft. causing a maximum fibre stress in the concrete of 2,245 lb. per sq. in., computed by the parabolic method of 2990 lb. per sq. in. computed by the straight line method. This is 427% of the allowable load at 600 lb. per sq. in. The test cylinder in this case gave a unit stress of only 1,282 lb. per sq. in. The total deflection for this test floor was 1.208 in.

COLUMBIA UNIVERSITY
Testing Laboratories
New York City

Report of
Freezing and Thawing Tests Made Upon
Cinder Concrete Tiles
Submitted by
CINDER TILE COMPANY
120 West 42d Street
New York City

Report No. 1448 December 2, 1924.

General.—The material submitted and tested as hereinafter described consists of:

1—8 x 8 x 16 Cinder Concrete Tile.
1—8 x 12 x 16 Cinder Concrete Tile.
1—8 x 8 x 16 Semi-solid Cinder Concrete Tile.

These tiles were taken from a lot selected and marked by the Bureau of Buildings, City of New York, represented by Mr. Heatley, Borough of Bronx. The remainder of this lot had previously been tested on September 23rd, 1924, in the presence of representatives of the Bureau of Buildings, City of New York. All material mentioned was submitted by the Cinder Tile Company, 120 West 42nd Street, New York City, represented by Mr. E. B. Corbet.

Method of Test. The three above mentioned specimens were dried to constant weight and immersed in water. Fours hours after which they were placed in a refrigerator maintained at a temperature of 6° F. and allowed to remain for twenty-three hours. They were then removed and placed for one hour in water having a temperature of 150°F. At the end of this thawing period, the specimens were again placed in the refrigerator and frozen as above and again thawed, thus causing the tile to be alternately frozen and thawed once every twenty-four hours. The test consisted of twenty such alternate freezings and thawings. At the end of this freezing test the specimens were again dried to constant weight and the compressive strength determined.

Results of Test. The tabulations shown below give the results of the freezing and thawing tests.

Compressive Strength After Freezing

Laboratory Test No.	28549	28551	28794
Specification	8 x 12 x 16	8 x 8 x 16	8 x 8 x 16 Header back-up
Length, in.	16.00	15.90	15.75
Width, in.	12.10	8.05	8.00
Height, in.	8.05	8.50	8.00
Area, sq. in.	193.5	128.00	126.0
Maximum Load, lb.	294700	143850	120080
Ult. Strength lbs. sq. in. after freezing	1529	1123	951
Compressive Strength lbs. sq. in.	1152†	915†	818 *
Per cent change in Str.	32.6% gain	22.7% gain	16.25 % gain

†NOTE—These values obtained from Laboratory tests Nos. 27544, 27545, 27546, of September 23, 1924.

*NOTE—This value obtained from Laboratory tests Nos. 27517-19, 27538040, 27524-26, 27524-26 of September 23, 1924.

Witnesses. These tests were witnessed by the following representatives:
Mr. T. Heatley, Bureau of Buildings, Borough of Bronx, Mr. J. D. Marder, Bureau of Buildings, Borough of Manhattan, Mr. A. B. Comins, Bureau of Buildings, Borough of Richmond, Mr. J. Bracken, Bureau of Buildings, Borough of Brooklyn and Mr. E. B. Corbet, Cinder Tile Company, Inc.

Respectfully submitted,
TESTING LABORATORIES,
per
(Signed) W. J. KREFELD,
Engineer of Tests.

PITTSBURGH TESTING LABORATORY
Established 1881
Inspecting Engineers and Chemists
Pittsburgh, Pa.

Report of Test of Cinder Concrete Block
for
MR. F. J. STRAUB, NEW KENSINGTON, PA.

On December 11th, 1923, Mr. F. J. Straub, in my presence removed a cinder concrete building block from the outside foundation wall of the residence of Mr. Yoder, 215 Charles Avenue, New Kensington, Pa. This house had been built for seven years. The block selected was an average block. It was taken from a point in the wall 3.5 feet below the surface of the ground. Although the earth in contact with the block was quite wet from recent rains, there was no indication of moisture on the inside face of the block. It might also be stated that there were no signs of moisture anywhere on the inside faces of the foundation walls.

Tests of the block in the laboratory gave the following results:

Compression Tests

Dimensions, Inches	15.69 x 4.0 x 8.0
Area, Sq. In.	62.75
Crushing Load, Pounds	45280
Crushing Strength, lbs. per sq. in.	721

NOTE—Block cut in half lengthwise for crushing test as back side of block was damaged in removing it from the wall.

Chemical Analysis *(See Footnote)

The proportions of cement and cinders calculated from a chemical analysis of the specimen of block are as follows:

Cement—1 part
Cinders—7 parts
} By weight

The proportion of cement by volume would be smaller than by weight and would not be richer than 1 part of cement to 9 parts of cinder.

PITTSBURGH TESTING LABORATORY.
F. H. Wood.
Engineer of Tests.

*All licensees under Straub Patents are required to use a 1 to 6 mix, instead of the 1 to 9 mix mentioned above. The remarkable results instanced are accordingly increased by a 50% stronger mix, resulting in blocks of greater density and moisture resistance.

RUTGERS COLLEGE
and the
STATE UNIVERSITY OF NEW JERSEY
New Brunswick, New Jersey

Department of Civil Engineering

November 9th, 1923.

Hudson Fireproof Block Co.,
Homestead, North Bergen, N. J.

Gentlemen:

Herewith I take pleasure in presenting report of results of crushing tests made on three (3) "Straub Cinder Concrete Block" submitted by your representative, Mr. Vincent Copcutt. It is understood that these tests were made for the information of the Building Department, City of Plainfield, N. J.

Each specimen was of standard size, 8" x 16" x 8", but owing to the limited capacity of our testing machine (100,000 lbs.), it was necessary to cut the block and test each part separately. In consideration of the method of testing in this case, an allowance of five (5) per cent. has been added to the actual crushing load applied to each block.

All of the blocks tested were at least 28 days old. Gross area of block, 128 sq. ins., net area of block, 88 sq. ins.

Block No.	Actual Crushing load in pounds	Allowed Crushing load in pounds	Strength per sq. in. gross area	Strength per sq. in. net area
1	110,080	115,580	903	1314
2	106,710	112,045	875	1273
3	140,690	147,725	1154	1679
		Average	977	1422

Very truly yours,

STUART A. STEPHENSON, Jr.
Assoc. Professor of Civil Engineering.
In charge of Testing Laboratory.

PHILADELPHIA & READING RAILWAY COMPANY

Office, Assistant Train Master

St. Clair, Pa., March 24, 1924

Pottsville Building Block Co., Pottsville, Pa.

Gentlemen:

This morning I witnessed a test of two "Straub" blocks that were brought from your plant at Mount Carbon. The test was made to satisfy myself and others of the strength of the block.

The test was made on an eight inch hydrauiic ram, the block resting firmly on an iron base perfectly flat and a steel plate laid perfectly flat on top of the cinder block, the ram placed against the block and the hydraulic pressure started.

The one block crushed between eight and nine hundred pounds to the square inch.

A second test was made with another block and this second block crushed at one thousand pounds to the square inch, or with twenty-five ton pressure.

Upon examining the two blocks after the test, we concluded that the block that crushed at eight and nine hundred pounds pressure, was a trifle greener than the block used in the last test.

The test was made to satisfy ourselves as there are some contemplating building among the parties witnessing the test and all parties marveled at the strength of the blocks.

If at any time you care to refer any person to me as being present at this test, I will be glad to give any information regarding it.

Mr. J. P. McCord, residing at Port Carbon, who is boilermaker for the P & R. Rwy. Company, witnessed the test, in fact he had charge of the machine when making the test. There was no sharp practice, and was an honest-to-goodness test and it gives me great pleasure to inform you just what the result was. Yours truly,

S. A. WRIGHT, Assistant Train Master.

TESTS MADE BY
DIRECTOR OF PUBLIC WORKS
RICHMOND, VA.

A test was made on Straub Cinder Blocks by the Director of Public Works of Richmond, Va., and the following is an extract from his annual report ending December 31st, 1923.

"Outside walls and top were built of cinder block 12 inches thick, consisting of an 8 inch block with a core and a 4 inch solid block. These were alternated from inside to outside so as to form a perfect tie in and were also tied together with wall strips. The cinder block was not decided upon until after one of the blocks had been put in the furnace fire at a temperature of about 1250-1400 degrees Fahr., and allowed to remain 45 minutes. Then removed and dropped in a barrel of cold mixture of fish brine and water which showed little if any deterioration. After this a test was made by the chemist and the block showed a compressive strength of 700 pounds."

PITTSBURG TESTING LABORATORY
Pittsburg, Pa.—January 12, 1922

Laboratory No. 48544
Report of Test of Holding Strength of Wire Nails for

F. J. Straub, New Kensington, Pa.

In order to obtain the holding power of wire nails in cinder building blocks as compared with wood, samples were placed in a Universal testing machine and the loads required to draw the nails determined.

Results of Test

Size of Nail	Material Used	Depth of Nail in Material	Load in Lbs. Required to Draw Nails
20 d	2 x 4 Yellow Pine	1½	260
16 d	2 x 4 Yellow Pine	1½	270
20 d	Cinder Concrete Block	1½	300
20 d	Cinder Concrete Block	1½	250
20 d	Cinder Concrete Block	1½	200
16 d	Cinder Concrete Block	1½	200
*20 d	Old Nail in Cinder Concrete Block 5 years	1½	650

*This specimen was a nail which had been driven into a cinder block used in the walls of a bottling plant at New Kensington, Pa. When the building was partly destroyed by fire, this specimen was selected to determine the effects of age on the holding power of the nail. The nail had not rusted in the concrete, although it had rusted where not embedded.

PITTSBURG TESTING LABORATORY
P. J. Freeman,
Engineer of Tests

PIER TESTS

Made by

COLUMBIA UNIVERSITY

TESTING LABORATORIES

Tests of Straub cinder concrete block at Columbia University Testing Laboratories show ratios of .758, .700 and .547 between compressive strengths of individual units and of piers built of similar units.

Tests were made for three licensed manufacturers of Straub block—Bergen Building Block Co., Ridgefield Park, N. J., Hudson Fireproof Block Co., Homestead, N. J., and Brooklyn Crozite Brick Corp., Brooklyn, N. Y.

The following is from the Columbia University report:

The tests consisted of compression tests on Straub Cinder Concrete Block, and upon piers built with these block. The cinder concrete block and materials entering into the construction of the piers were furnished by the above manufacturers.

Construction of Masonry Piers

The masonry piers tested were constructed of Straub block by a mason furnished by the manufacturers. Three piers of the following dimensions were constructed:

Pier No. 1—Composed of 8 x 8 x 16-in. two-cell block. Pier, 8.05 x 23.92 x 54.10-in. high. Pier consisted of six courses of 8 x 8 x 16-in. and 8 x 8 x 8-in. block with joints broken and one top course composed of a 4 x 8 x 16-in. and 4 x 8 x 8-in. solid cinder block.

Pier No. 2—Composed of 8 x 8 x 16-in. two-cell block. Pier, 8.15 x 23.90 x 53.8-in. high. Constructed same as Pier No. 1.

Pier No. 3—Composed of 8 x 12 x 16-in. three-cell block. Pier, 12.40 x 24.0 x 54-in. high. Pier consisted of six courses of 8 x 12 x 16-in. and 8 x 12 x 8-in block, with joints broken and one top course composed of three 8 x 12 x 8-in. solid cinder concrete block.

The block were laid up in a portland cement mortar, mixed in the proportions of one part cement and three parts sand, and stored indoors for a period of twenty days.

All of the above piers were provided, both at top and bottom, with ½-in. steel bearing plates, set in a mortar bed, so as to insure a uniform bearing on each end of the pier.

Method of Test

The masonry piers were placed in a 400,000-lb. Olsen testing machine provided with a spherical bearing plate and tested to failure in compression. Pier No. 1 was subjected to the compressive loads in increments of 5000 lbs. and the corresponding compressive strains measured. Piers No. 2 and No. 3 were loaded to failure without measurement of the compressive strains.

Three 8 x 8 x 16-in. block and three 8 x 12 x 16-in. block, similar to those used in the construction of the piers were tested individually in the same testing machine to determine their ultimate compressive strength. The specimens were provided with plaster of paris bearing surfaces before test.

Results of Tests

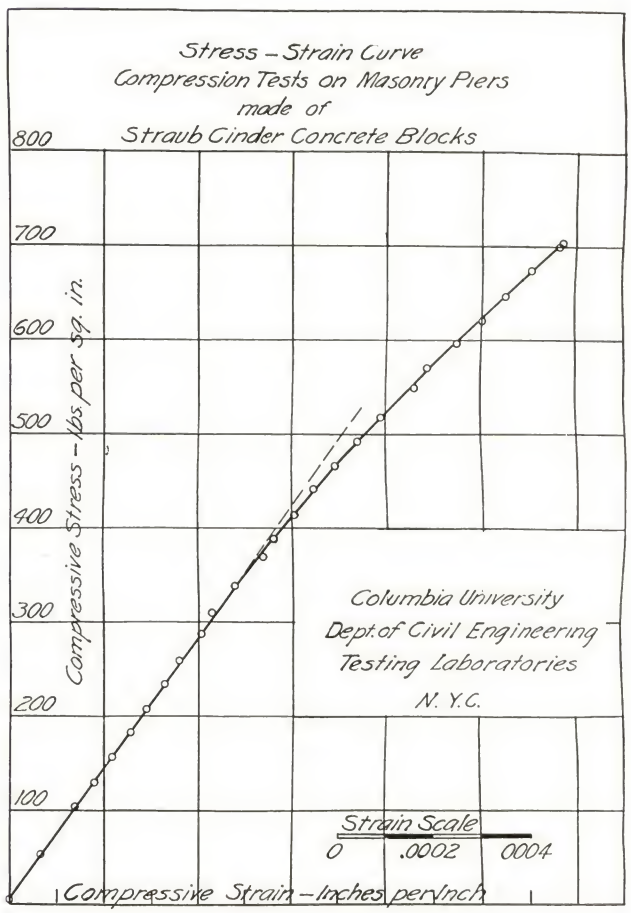
The following table gives the results of compression tests made upon the three masonry piers:

Test No.	23748	23749	23750
Specimen	No. 1	No. 2	No. 3
Height, ins.	54.10	53.8	54.0
Width, ins.	23.92	23.90	24.0
Thickness, ins.	8.05	8.15	12.40
Gross area, ins.	192.6	194.8	297.6
Maximum load, lbs.	135,600	126,500	214,000
Ult. strength, lbs. per sq. in.	704	649	719
Weight, lbs.-oz.	469–4	469–0	703–4

The following table gives the results of compression tests on individual block, similar to those used in the construction of the piers:

Test No.	23751	23752	23753	23754	23755	23756
Specimen	8x12x16-in. Block			8x8x16-in. Block		
Mark	1	2	3	4	5	6
Length, in.	16.02	15.90	15.90	15.95	15.80	15.94
Width, in.	12.40	12.40	12.25	7.98	8.02	8.02
Height, in.	8.04	8.12	8.00	7.80	7.82	8.00
Gross Area, sq. in.	198.6	197.2	194.8	127.3	126.7	127.8
Net Area, sq. in.	135.1	133.7	131.3	86.7	86.1	87.2
Max. Load, lbs.	240,620	262,770	272,900	113,250	113,430	126,680
Ultimate Strength, lbs. per sq. in., Gross	1,210	1,330	1,405	890	895	992
Net	1,780	1,965	2,080	1,305	1,315	1,455
Weight, lbs.-oz.	59–0	59–12	61–8	38–0	38–10	39–8
Average Strength, based on gross area, lbs. per sq. in.		1,315			927	

The loads and corresponding compressive strains determined from test upon Pier No. 1 are as follows:



STRESS STRAIN DATA

Pier No. 1. Dimensions—8.05 x 23.92 x 54.10 in.
Gage length, 34.85 in.
Area, 192.6 sq. in.

Applied Load lbs.per sq.in.	Strain, Inches per Inch	Applied Load lbs. per sq. in.	Strain, Inches per Inch
5	0	5	.0000402
52	.0000622	389	.000560
104	.000136	415	.000605
130	.000179	442	.000647
156	.000216	467	.000691
5	.0000060	493	.000742
184	.000255	519	.000788
208	.000290	550	.000860
234	.000325	571	.000886
260	.000359	597	.000950
5	.0000175	622	.001002
288	.000403	649	.001053
312	.000426	675	.001104
338	.000477	700	.001163
370	.000537	704 Maximum	

Modulus of elasticity as determined from the above data is 698,000 lbs. per sq. in., based on the intensity of stress on the gross cross section. Based on a net section of 130 sq. in., the modulus of elasticity would be 1,035,000 lbs. per sq. in., approximately.

From the above tests, the ratio of the compressive strength of the masonry pier to that of the individual block based on gross cross sectional area is a sfollows:

Pier No.	Compressive Strength of Pier	Compressive Strength of Block	Ratio
1	704	927	.758
2	649	927	.700
3	719	1315	.547

Note—Piers 1 and 2, composed of 8 x 8 x 16 in. block.
Pier 3 composed of 8 x 12 x 16 in. block.

STRUCTURAL MATERIALS RESEARCH LABORATORY
Lewis Institute, Chicago
Tests of Cinder Concrete Block

Sent by Straub Concrete Block Co., Forest Park, Ill.
Request of W. R. Harris, Concrete Products Association, Chicago.

Our Lot No. 6554—3 blocks

Tests of 8 by 8 by 16-in. cinder concrete building block containing three vertical air spaces. The 3 block were (identified by our Lot No. 6554) first tested for absorption; after the absorption test they were room-dried and tested for strength.

Lot No. 6554—Mix approximately 1-6, about 3 weeks old when received.

Absorption Tests of the block were made in water at room temperature. They were dried to constant weight at a temperature of about 100° C,. and immersed in water for 24 hours. The gain in weight calculated as a percentage of the dry weight is the absorption. The block were allowed to room-dry for two days after the absorption test before breaking in compression.

Compression tests of the block were made in a 200,000-lb. Olsen Universal Testing Machine. The block were tested as laid in the wall. The bearing surfaces were capped with a mixture of neat cement and gypsum to insure an even distribution of load. The load was applied through a spherical bearing block.

Lot No.	Date of Test	Dim. Block—In. Loaded Surface	Depth	Gross Area sq. in.	Net Area sq. in.	Compressive Strength Total lb. per sq. in. Load Lb.	Gross Area	Net Area	Dry Weight Lb.	Absorption Percent by Weight
6554	2-9-23	8.0 by 15.8	7.7	126	77	123,850	980	1610	26.28	11.4
						135,180	1070	1750	28.19	9.7
						144,000	1140	1870	28.65	9.2
				Average			1060	1760		10.1

Correct,—WALKER.

Approved, D. H. ABRAMS.
Professor in charge of Laboratory

March 21, 1923.

E. L. CONWELL & CO.
Successor to
HENRY S. SPACKMAN ENGINEERING CO.
Established 1894
Engineers Chemists Inspectors
2024 Arch Street

Philadelphia, Pa., July 6, 1925.

Berks Building Block Co.
Northmont, Reading, Pa.

Gentlemen:

The following is a report of our tests of heat conductivity of Straub Block recently submitted by you.

Lab. No. 32810.

The values given below represent the gramcalories that will pass per second through 1 sq. centimeter of the substance. This is called the coefficient of thermal conductivity.

	Coefficient
Straub Block No. 1	.0007
2	.0006
3	.0004
4	.0007
5	.0007
6	.0004
7	.0007
8	.0007
Av.	.00061

For comparison, we give below the coefficient for several other materials:

Terra Cotta	.003
Silica Brick	.002
Building Brick	.003
Steel	.140
Asbestos	.0003

These tests show that Straub Block have a coefficient of thermal conductivity approximating those of usual insulating materials.

Respectfully submitted,
E. L. CONWELL & CO.

TESTS BY E. L. CONWELL & CO.

E. L. CONWELL & CO.
Successor to
Henry S. Spackman Engineering Co.
Established 1894
ENGINEERS - CHEMISTS - INSPECTORS
2024 Arch Street

Philadelphia, Pa.
July 31, 1924.

Berks Building Block Company,
Reading, Pennsylvania.

Gentlemen:

The following is a report of our observations at the fire and quenching test of Straub cinder block of your manufacture held at your plant Saturday, July 12, 1924.

Test Structure. A special building for the test was constructed by experienced masons. It was approximately 20 ft. by 12 ft. and 10 ft. high and contained 637 cinder block, size 8 in. by 8 in. by 16 in., 804 face brick and 130 hollow clay tile laid up in lime mortar. One partition wall of Straub Block was loaded with 10 tons of pig iron. The interior was filled with oil soaked cordwood. The structure before test is shown in photograph No. 1.

Fire Test. At 1.30 P. M. the fire was started and was fed at short intervals with oil soaked wood. A Fery pyrometer was used to determine the temperatures reached in the interior, while mercury thermometers were used to obtain temperatures at exterior points and within the cells of the block and tile. The temperatures reached within the structure were as follows:

Interior Temperatures

Time	Temperature
1.45	710° F.
1.50	800° F.
1.55	1050° F.
2.00	1205° F.
2.05	1350° F.
2.10	1385° F.
2.15	1420° F.
2.20	1470° F.
2.25	1505° F.
2.30	1510° F.
2.35	1540° F.
2.40	1510° F.
2.45	1530° F.
2.50	1505° F.
2.55	1520° F.
3.00	1485° F.
3.05	1530° F.
3.10	1505° F.
3.15	1500° F.

The temperatures reached in the cells of the hollow clay tile and cinder blocks were as follows:

Cell Temperature

Time	Clay Tile	Cinder Block
2.00	140° F.	115° F.
2.15	183° F.	140° F.
2.30	260° F.	160° F.
2.45	413° F.	260° F.
3.00	681° F.	384° F.
3.15	704° F.	397° F.

Quenching Test. When the fire had continued 1½ hrs., and with an interior temperature of 1500° F. the fire was extinguished and the building completely saturated with water by the Reading Fire Department. This constitutes an exceedingly severe test of the materials, involving a sudden reduction of temperature from 1500° F. with severe resultant strains and stresses from quick contraction.

Materials After Test. We subsequently examined the building and also inspected each unit as the building was demolished. All of the walls were free from bulging or deflection and the Straub Block party wall loaded with 10 tons of iron was unaffected except on the surface. All of the materials were discolored by smoke or water.

Our inspection of the various units removed during demolition is reported as follows:

Of the 637 Straub Block, 2 were cracked; the remaining 635 were intact and uninjured beyond surface calcination to a maximum depth in a few cases of $\frac{3}{16}$ in.

The clay tile were badly cracked and checked unfit for use.

Of 91 face brick exposed in the north party wall 85 were cracked and unfit for use.

Tests of Straub Block from Structure. As a direct determination of the effect of the fire and quenching upon the strength of Straub Block, 5 were taken from various places in the structure after the test and tested in comparison with 5 block of same age taken from stock piles. The results were as follows:

Compression Tests

Specimen No	Block from fire. Crushing strength lbs. per sq. in.	Block from stock pile gross area.
1	792.0	763.0
2	813.0	838.0
3	774.0	849.0
4	771.0	793.0
5	800.0	761.0
Av.	790.0	801.0

These results show that Straub Block after exposure to fire for 1½ hrs. with a maximum temperature of 1540° F. followed by quick quenching by water suffered no appreciable loss of structural strength and that they still were capable of meeting the usual minimum crushing strength requirement of 750 lbs. per sq. in.

Upon analysis an average sample of the block was found to contain:

Parts by Volume

Cement	1.00
Cinders	6.13

Summary. In length and intensity this test approximates the conditions of a destructive dwelling house fire and their condition at the end shows cinder block to be strongly fire resistant and to be capable of passing through the average fire unimpaired except for surface discoloration.

Respectfully submitted,

E. L. CONWELL & CO.
Registered professional engineer.

E. L. CONWELL & CO.
Successor to
HENRY S. SPACKMAN ENGINEERING CO.
Established 1894
Engineers Chemists Inspectors
2024 Arch Street
Philadelphia

Berks Building Block Co.,
Crescent and Belmont Avenues,
Northmont, Reading, Pa.

Gentlemen:

We report tests of specimens of Straub block and lintels recently submitted by you per your letter of April 3, 1925.

Lab. No. 30120.

Specimen No.	Size	Strength in Compression. (lbs. per sq. in. Gross Area).
1	8x8x16	1470.0
2	"	940.0
3	"	945.0
4	"	990.0
5	"	763.0
6	"	1075.0
7	"	927.0
8	"	1222.0
9	"	1003.0
10	"	1550.0
	Av.	1088.0

Specimen No.	Size	Strength in Compression. (lbs. per sq. in. Gross Area).
11	16x12x8	750.0
12	"	993.0
13	"	870.0
14	"	1040.0
15	"	940.0
16	"	751.0
17	"	758.0
18	"	770.0
19	"	759.0
20	"	1100.0
	Av.	873.0

The result of tests on the lintels shown below is the transverse or crossbreaking test, the result of which is always expressed as modulus of rupture. The Moduli of rupture were calculated by the formula: $R = 3Wl/2bd^2$

R = 3xLoad at Failure x distance in inches between centers divided by 2 x breadth x depth squared.

The modulus of rupture is an approximate expression of the apparent stress in the extreme fibre of a transverse test specimen under the load that produces rupture. It is not the crushing strength. The stresses set up comprise tension and compression for the specimen is reacting as a beam with the upper part in compression and the lower in tension. The inaccuracy of the test may be disregarded as transverse tests of all materials contain the same inaccuracy and are therefore directly comparative. The results of transverse tests expressed as moduli of rupture are very nearly proportional to the actual stresses. Moduli of rupture of common structural materials are as follows:

	(lbs. per sq. in.)
Stone	2000
Brick	800
Plain Stone Concrete (1-2-4)	500

Transverse Tests of Lintels

Lintels tested on edge resting on rounded knife edges. Load applied by rounded knife edge on centre of span.

In all cases, the span equals the even foot dimension of the lintels tested.

Specimen	Size	Modulus of Rupture. (lbs. per sq. in.)
21	3 ft. 8 in.	1430.0
22	"	1285.0
23	"	1326.0
	Av.	1347.0
24	4 ft. 8 in.	1129.0
25	"	943.0
26	"	759.0
	Av.	944.0
27	5 ft. 8 in.	783.0
28	"	1128.0
29	"	1214.0
	Av.	1042.0
30	6 ft. 8 in.	1407.0
31	"	1317.0
32	"	1377.0
	Av.	1367.0
33	7 ft. 8 in.	1406.0
34	"	1309.0
35	"	1392.0
	Av.	1369.0

These transverse tests were performed as described above. The results are therefore directly comparative with the values of other materials given above. The Philadelphia Building Code requires new building materials (the classification into which your lintels would belong) to show a modulus of rupture of not under 450 lbs. per sq. in.

Yours very truly,

E. L. CONWELL & CO.

E. L. CONWELL & CO.
Successor to
Henry S. Spackman Engineering Co.
Established 1894
ENGINEERS CHEMISTS INSPECTORS
2024 Arch Street
Philadelphia, Pa.

January 19, 1925.

Harrisburg Building Block Company,
Cameron and Reily Streets,
Harrisburg, Pa.

Gentlemen:

The following is a report of our observation of a comparative test between a brick wall and a Straub cinder block wall of equal dimensions, conducted at Harrisburg Building Block Co., November 7, 1924.

The brick wall was 6 ft. 9.5 in. in length by 8 in. in width and 32 in. high. The cinder concrete block wall was 6 ft. 8.5 in. in length by 8 in. in width and 32 in. high.

These walls were erected by a practical bricklayer and were laid up in lime mortar. These walls were inspected by our representative in both vertical and horizontal positions before the test and found to be of good standard workmanship.

These wall specimens were subjected to a transverse test as follows. The specimens were supported flatwise on 4 ft. centers and loaded at the center point with cinder block until failure took place. The brick wall specimen failed under a load of 379 lbs. The Straub block wall specimen failed under a load of 1227 lbs. In the case of the brick wall specimen, there was extensive failure of the brick and mortar joints while a clean fracture occured in the Straub block wall specimen without accompanying failure of individual block.

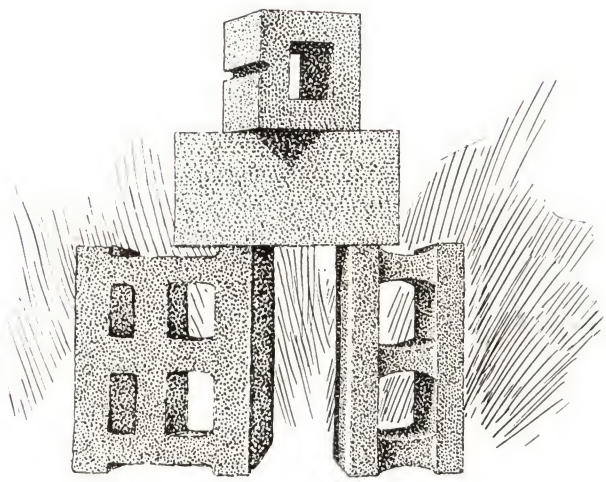
The attached photographs show the following:
No. 1 shows the brick wall specimen ready for test.
No. 2 shows the brick wall specimen after test.
Nos. 3, 4 and 5 show the Straub block wall specimens sustaining loads of 379 lbs., 500 lbs., and 1000 lbs.

No. 6 shows comparative quantities of block required to cause failure of the wall specimens as described above.

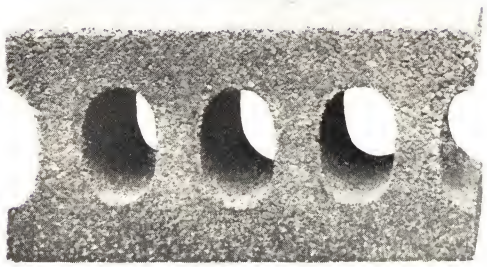
Respectfully submitted,
E. L. CONWELL & CO.
Registered Professional Engineer.

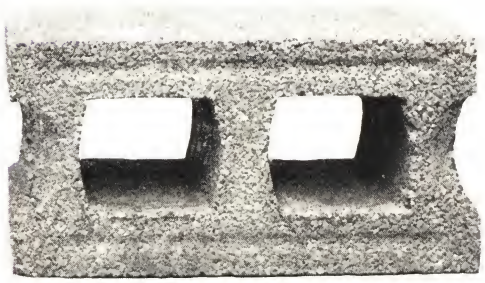
Because the camera was adjusted to directly face the slab, only the first row of the block load is visible in the above illustrations.

TYPES & SIZES
STRAUB *Cinder Building* BLOCKS



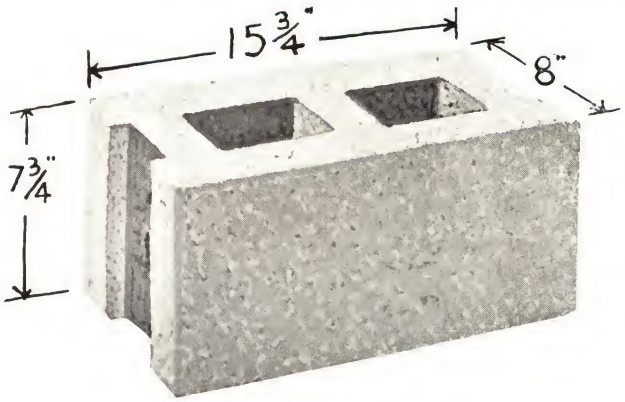
Two types of block that present identical advantages





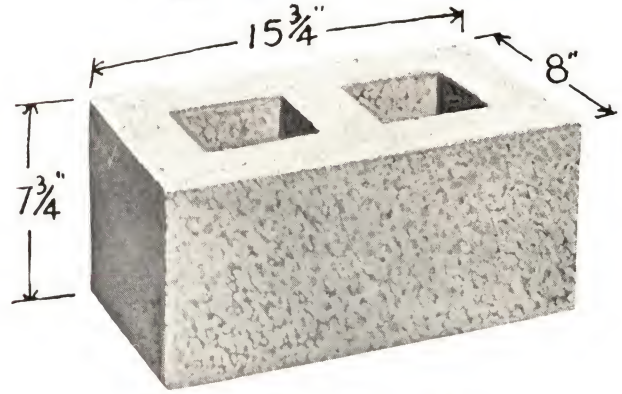
The two types of block shown above illustrate two different designs of air spaces. Some licensees under Straub Patents manufacture both types, while some specialize in one type only.

The air spaces, regardless of shape, represent 27% to 33% of the gross cross sectional area, while the texture, load bearing capacity, outside dimensions, and all other characteristics are identical.



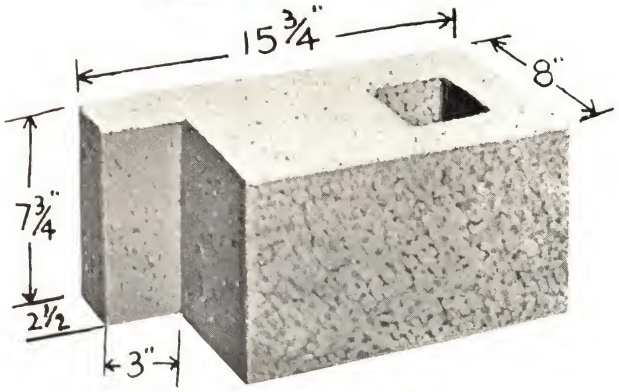
8" REGULAR WALL BLOCK

Width	8 Inches
Height	7¾ "
Length	15¾ "
Weight	32 to 34 lbs.



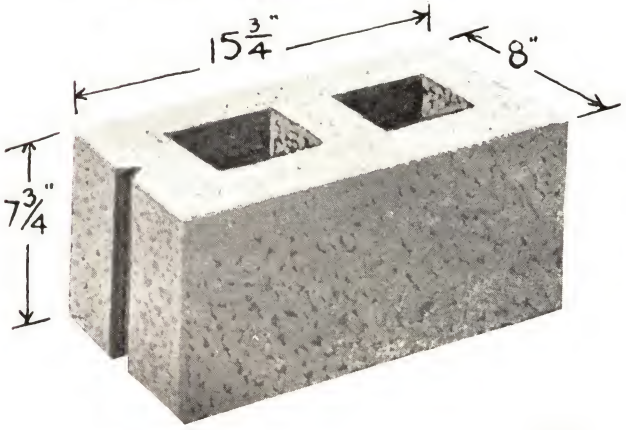
8" FULL CORNER BLOCK

Width	8 Inches
Height	7¾ "
Length	15¾ "
Weight	33 to 35 lbs.



8" FULL JAMB BLOCK

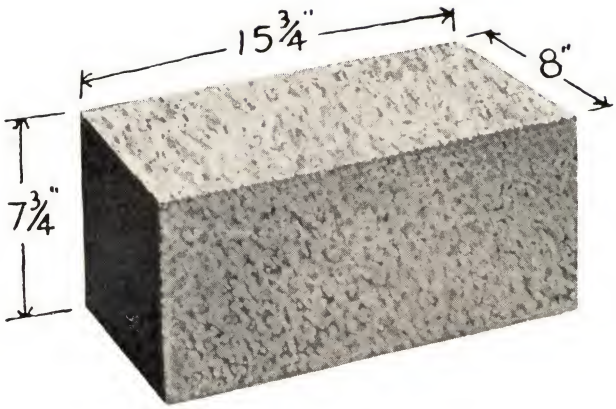
Width	8 Inches
Height	7¾ "
Length	15¾ "
Weight	36 to 38 lbs.



8" FULL GROOVED BLOCK

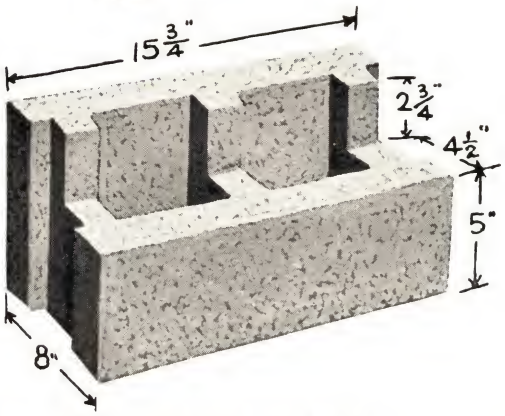
Width	8 Inches
Height	7¾ "
Length	15¾ "
Weight	33 to 35 lbs.

See note on page 174 regarding shape of air spaces



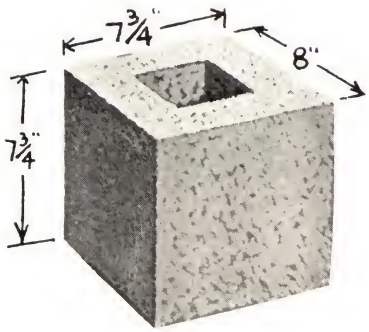
8″ SOLID WALL BLOCK

Width	8 Inches
Height	7¾ "
Length	15¾ "
Weight	44 lbs.



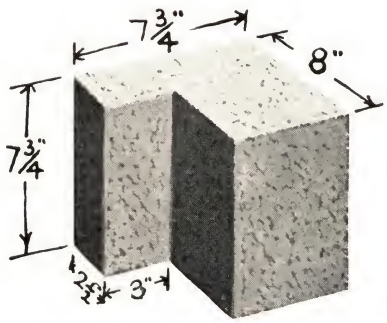
8″ FULL HEADER BLOCK

Width	8 Inches
Height	7¾ "
Length	15¾ "
Weight	25 lbs.



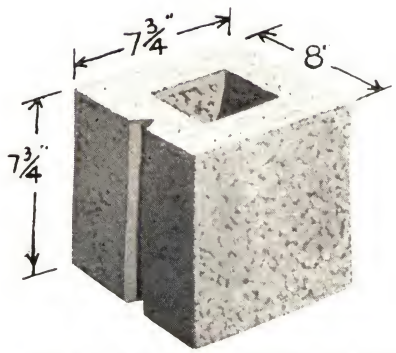
8″ HALF, OR HALF CORNER BLOCK

Width	8 Inches
Height	7¾ "
Length	7¾ "
Weight	16 lbs.



8″ HALF JAMB BLOCK

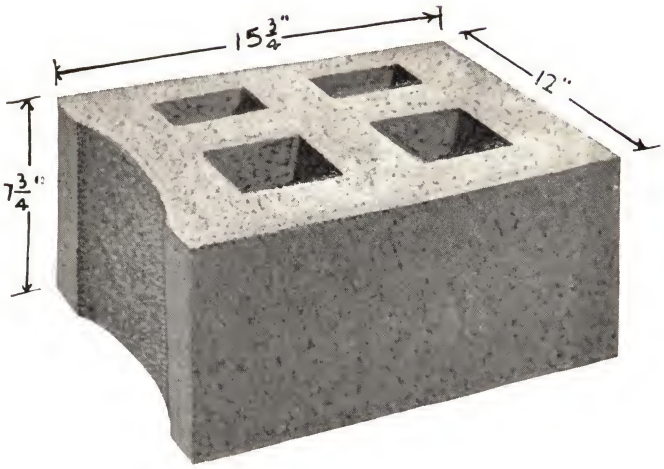
Width	8 Inches
Height	7¾ "
Length	7¾ "
Weight	15 lbs.



8″ HALF GROOVED BLOCK

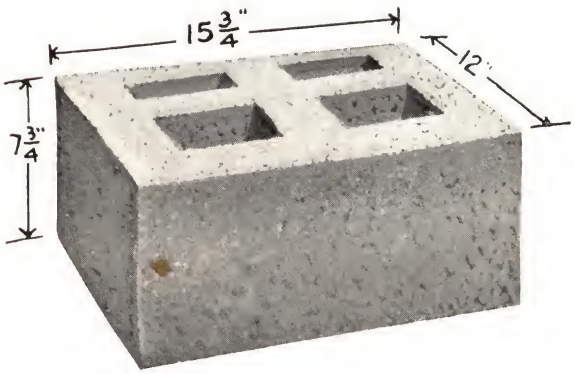
Width	8 Inches
Height	7¾ "
Length	7¾ "
Weight	16 lbs.

See note on page 174 regarding shape of air spaces



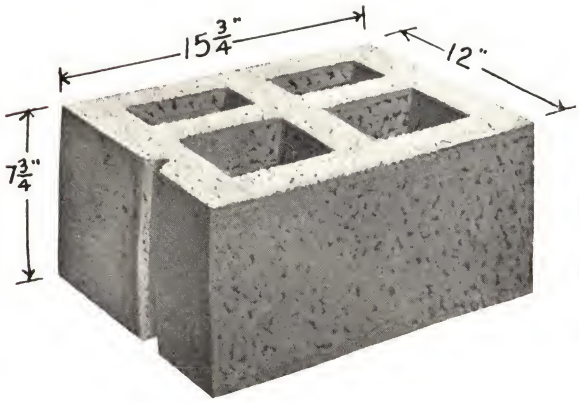
12″ REGULAR WALL BLOCK

Width	12 Inches
Height	7¾ "
Length	15¾ "
Weight	52 to 56 lbs.



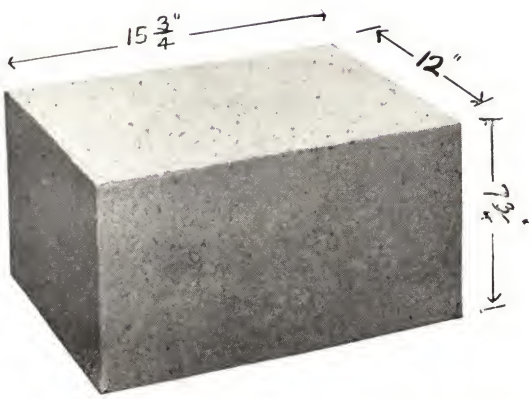
12″ FULL CORNER BLOCK

Width	12 Inches
Height	7¾ "
Length	15¾ "
Weight	53 to 57 lbs.



12″ FULL GROOVED BLOCK

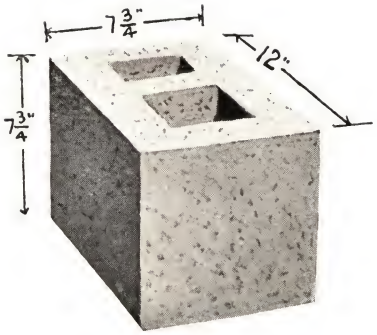
Width	12 Inches
Height	7¾ "
Length	15¾ "
Weight	53 to 57 lbs.



12″ FULL CORNER BLOCK (Solid)

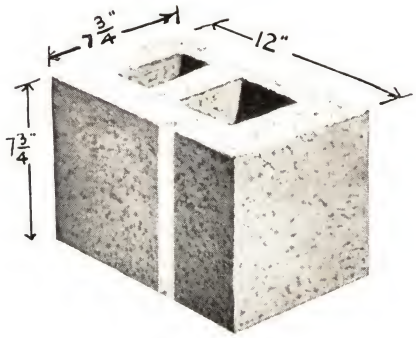
Width	12 Inches
Height	7¾ "
Length	15¾ "
Weight	68 to 72 lbs.

See note on page 174 regarding shape of air spaces



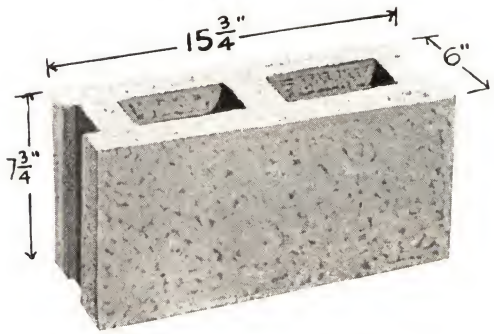
12″ HALF, OR HALF CORNER BLOCK

Width	12 Inches
Height	7¾ "
Length	7¾ "
Weight	30 lbs.



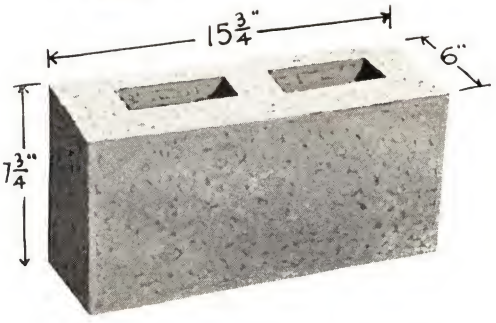
12″ HALF GROOVED BLOCK

Width	12 Inches
Height	7¾ "
Length	7¾ "
Weight	30 lbs.



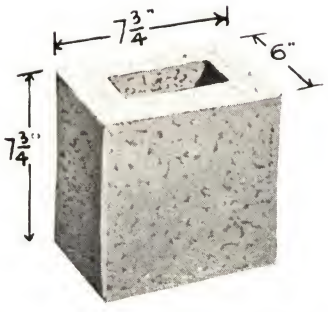
6″ REGULAR WALL BLOCK

Width	6 Inches
Height	7¾ "
Length	15¾ "
Weight	25 to 26 lbs.



6″ FULL CORNER BLOCK

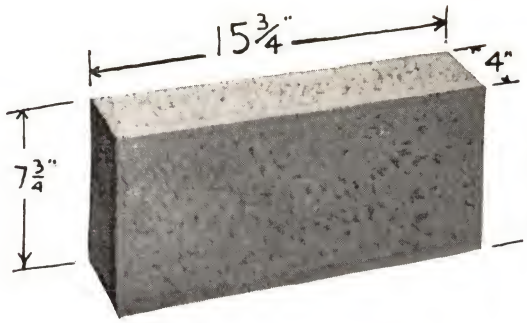
Width	6 Inches
Height	7¾ "
Length	15¾ "
Weight	26 to 27 lbs.



6″ HALF, OR HALF CORNER BLOCK

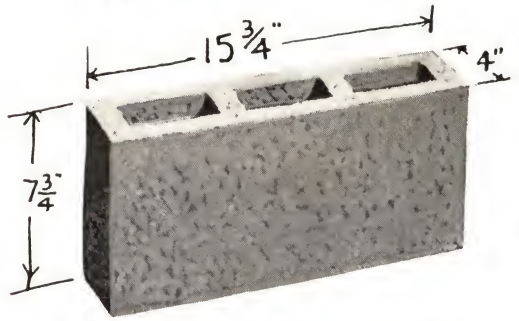
Width	6 Inches
Height	7¾ "
Length	7¾ "
Weight	13 lbs.

See note on page 174 regarding shape of air spaces



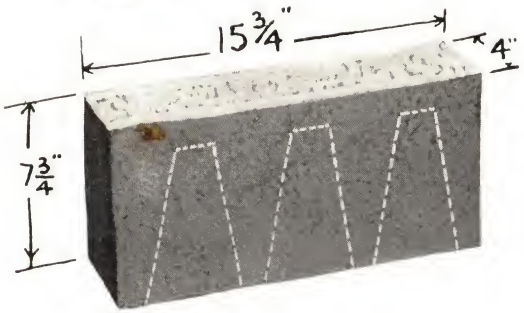
4" REGULAR WALL BLOCK
(Solid)

Width	4	Inches
Height	7¾	"
Length	15¾	"
Weight	24 lbs.	



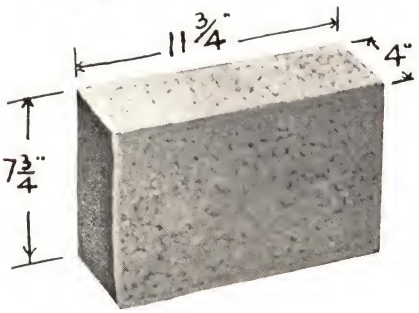
4" REGULAR WALL BLOCK
(Hollow)

Width	4	Inches
Height	7¾	"
Length	15¾	"
Weight	15 lbs.	



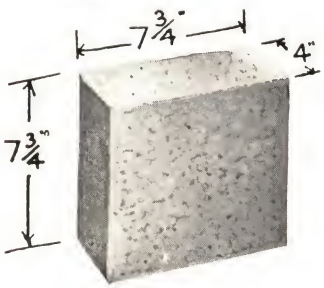
4" REGULAR WALL BLOCK
(Hollow with Solid Top)

Width	4	Inches
Height	7¾	"
Length	15¾	"
Weight	17 Lbs.	



4" THREE-QUARTER BLOCK

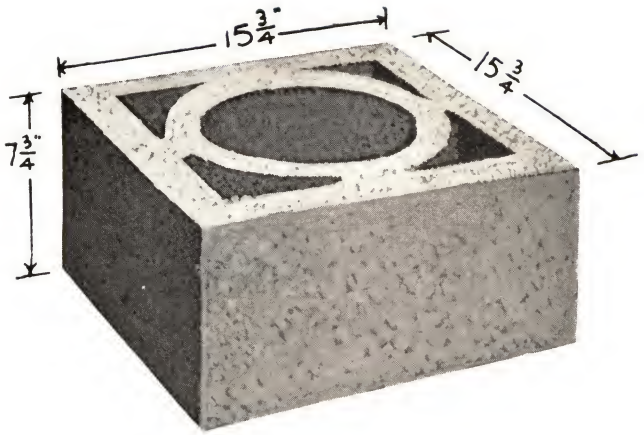
Width	4	Inches
Height	7¾	"
Length	11¾	"
Weight	18 lbs.	



4" HALF BLOCK

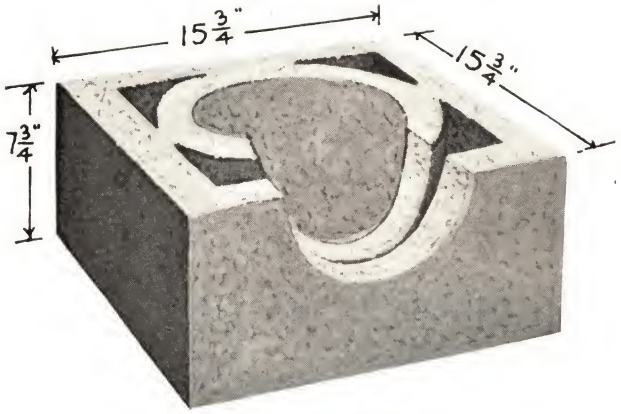
Width	4	Inches
Height	7¾	"
Length	7¾	"
Weight	12 lbs.	

See note on page 174 regarding shape of air spaces



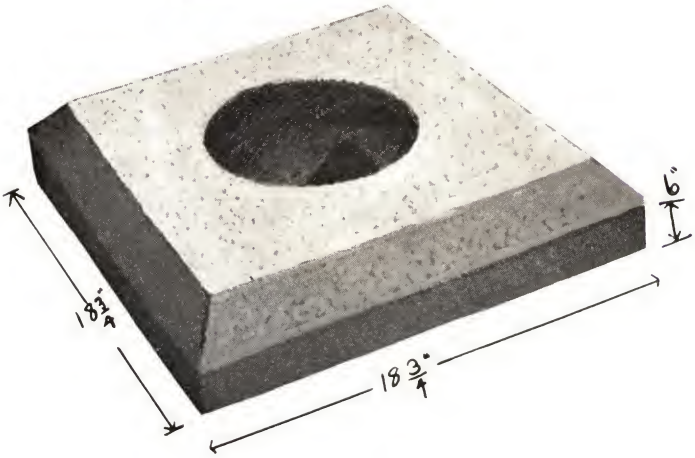
REGULAR CHIMNEY BLOCK

Width	15¾	Inches
Height	7¾	"
Length	15¾	"
Weight	57	lbs.



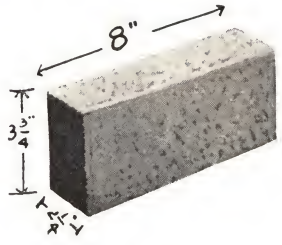
CHIMNEY BLOCK
WITH STOVE PIPE HOLE

Width	15¾	Inches
Height	7¾	"
Length	15¾	"
Weight	54	lbs.



SINGLE CHIMNEY CAP

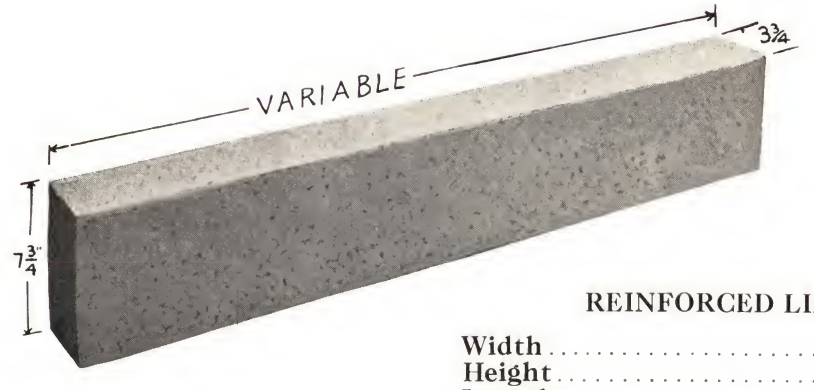
Width	18¾	Inches
Height	6	"
Length	18¾	"
Weight	90	lbs.



BRICK

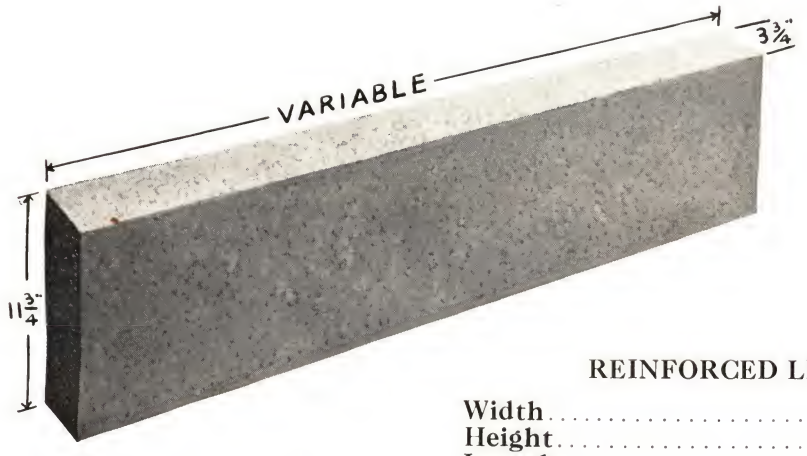
Width	3¾	Inches
Height	2¼	"
Length	8	"
Weight	3¼	lbs.

See note on page 174 regarding shape of air spaces



REINFORCED LINTELS

Width ..... 3¾ Inches
Height ..... 7¾ "
Length ..... Variable
Weight ..... See Tabulation below



REINFORCED LINTELS

Width ..... 3¾ Inches
Height ..... 11¾ "
Length ..... Variable
Weight ..... See Tabulation below

Length of Lintels	Weight of 8″ High	Weight of 12″ High
3′-8″	66	99
4′-8″	84	126
5′-8″	102	153
6′-8″	120	180
7′-8″	138	207
8′-8″	156	234
9′-8″	174	261

For moduli of rupture of lintels see page 171

See note on page 174 regarding shape of air spaces

CONSTRUCTION

In the above photograph, the mason is laying blocks in the party wall of a twin house. Note the use of one course of header brick between every two courses of 4″ hollow back-ups on the outside wall which will be furred. The top course of the Cinder Block Foundation walls is shown at bottom of illustration.

This photograph shows the proper method of spreading mortar on top of blocks, care should be exercised to prevent mortar joints running through from one face to the other, particularly outside walls.

The mason should spread mortar over the course in one operation, instead of laying one block at a time.

Suggestions for handling and laying Straub Blocks

This Photograph shows the use of the 8″ Regular Wall Block and the 8″ Header Block in backing up 4″ of brick wall, making a 13″ wall.

Note that no through joints of mortar occur between the outside and inside faces of the block in the wall.

Blocks should be set upon their ends on the scaffold within easy reach of the mason, so that the vertical side may be buttered without further handling, while the mason has his trowel in hand. Afterward, the mason can lay a number of blocks quickly without again taking up his trowel.

The incorrect method of piling blocks is indicated at the far end of the platform.

Illustrating the use of metal wall ties in bonding the face brick to the 4″ hollow back-up blocks. This wall will not be furred on the inside, as no through joints exist.

This photograph shows the 4″ and 8″ cinder block in use for backing up a stone-faced wall.

Illustrating the use of 4″ and 8″ blocks for backing up a stone facing. The 8″ Cinder Block Wall in the foreground is to be pointed out, as indicated in the following photograph.

The 8″ Cinder Block Walls on the rear of the stone building is pointed out in a manner similar to the stone work. Note the intersection of the blocks with the stone work at the corner of the rear wall. The above illustration shows this type of construction before the finish pointing is done.

Specifications for Construction with Straub Cinder Building Units

(1) GENERAL:

This Contractor shall furnish all labor and materials, transportation, tools and equipment required to erect the Straub Cinder Building Units and such other allied work as indicated on the drawings, all in accordance with the best and latest practice and as hereinafter specified; only skilled mechanics accustomed to the laying up of Straub Cinder Building Units shall be employed.

(Where the walls are trimmed with brick, cut stone or architectural terra cotta, or where the walls are faced or veneered with brick or limestone, specify whether this contractor shall set same, furnished by other contractors, or include both the furnishing and setting).

Contractor shall carefully examine the drawings and provide for the complete and proper construction of all work and shall furnish all steel rods, band iron, anchors, bolts, etc., hereinafter specified to be furnished in connection with the work included under this heading.

This Contractor shall build in all miscellaneous iron work furnished under other contracts and shall co-operate with and assist the carpenter or other contractors in any work which must be jointly executed.

This Contractor shall also furnish the proper protection for his men and for those working under him, as required by the Local and State laws.

(2) STRAUB CINDER BUILDING UNITS:

All Straub Cinder Building Units shall be straight, uniform, and sound, and of such character that they will pass and comply with the requirements of the local building code. Besides the regular blocks, use such special shapes and sizes as may be required to accomplish the provisions of the drawings and the aims of the architect.

(3) TESTS:

Copy of test report certifying that the test requirements have been complied with, indorsed by a recognized testing laboratory, will be accepted by the architect as satisfactory evidence that the proposed make of Straub Cinder Building Units will fulfill the requirements specified, subject to inspection approval as hereafter specified. All tests shall be conducted so as to conform with the requirements of the local building code.

(4) INSPECTION:

The requirements of inspection are that at least 85% of all material furnished in each carload or truck load shall be equal to the sample approved and shall comply with the specified crushing and absorption requirements, and the balance shall in the opinion of the architect, or his inspector, constitute only a fair and usual commercial variation from same, otherwise the entire shipment or such part of same as may be condemned by the inspector shall be culled and immediately removed from the site.

(5) MORTAR:

All mortar used for the setting of Straub Cinder Building Units shall be composed by volume of one part of Portland cement (approved brand) to three parts of clean sharp sand thoroughly mixed to a smooth moderately stiff mortar, to which may be added hydrated lime, not to exceed 10 per cent of the volume of cement. The lime and cement shall be thoroughly mixed before the addition of sand and water. The resulting mortar mixture shall be used within thirty minutes after the water is added and no retempering shall be permitted.

(6) LAYING:

All hollow blocks shall be laid with the cells vertical in the wall and in such a manner that the main bearing webs come in proper relation for bearing with those of the block below. No vertical or horizontal joints shall be mortared through the walls but liberal air spaces shall be left in the center of the walls by buttering the two edges of each block on both horizontal and vertical joints. When 12" blocks are used place mortar over front, center and rear webs exercising care that the mortar does not carry through the wall. All walls shall be bonded by breaking vertical joints in every coarse at least three inches. In warm weather all blocks shall be thoroughly wetted before use.

(7) FOUNDATION WALLS:

Where indicated on drawings the foundation walls and piers shall be constructed of Straub Cinder Building Units o' such size and shape as may be required and in conformity with the local building code. Special units shall be used for corners, offsets, and other breaks to maintain a good bond and to insure properly staggered joints throughout the length of the wall.

(In low, damp ground, water bearing clay or where springs or excessive ground water occurs, the outside of foundation walls shall be plastered with a mortar composed of one part Portland cement to two parts of sand with a mixture of an approved dampproofing composition and to be applied one-half to three-quarters of an inch in thickness. Also, where any quantity of ground water is present or known to occur, a dry drain should be laid around the foundation to carry the water away to a convenient point. Specified under this heading or under the plumbing and drainage work.)

(8) EXTERIOR WALLS AND INTERIOR BEARING WALLS:

All exterior walls above foundation and all interior bearing walls shall be constructed of the various thicknesses as indicated on drawings, forming all corners, returns and offsets as shown, and using the required shapes and sizes to work to corners and openings and to maintain proper bond throughout the length of the wall.

Use special jamb blocks for double-hung window frames.

Use reinforced Straub Cinder Concrete Lintels over all door openings or use lintels of special design as indicated.

Where arches occur in walls they shall be formed of two (or more) courses of cinder brick laid in rowlock fashion on suitable centers.

(9) BEARING WALL DESIGN:

The design and size of hollow Straub Cinder Building Units in bearing walls shall be such that the gross sectional area of the block is not stressed greater than one-tenth of the crushing strength of the particular units used, as ascertained by properly conducted test. The super-imposed loadings shall include the dead and live loads of floors and roof and the weight of wall construction, etc., and in no case shall the block be subjected to

tensile stress, unless suitable steel reinforcement is provided. Where heavy beams or girders are placed on hollow block walls, or where other concentrated loads occur, the holes shall be filled with concrete or the walls shall be capped with concrete or otherwise reinforced to properly distribute the load. The interior bearing walls shall be well bonded and tied into outside walls. Fire places and chimneys shall be built as shown and shall be well bonded into the walls in which they occur.

(10) PARTITION WALLS:

All partition and division walls other than load bearing shall be constructed of light weight hollow Straub Cinder Building Units of the thickness indicated on the drawings. They must be built true to line and plumb and must be well tied into other walls and be wedged against floor above. All units to be laid up in cement mortar with bonding joints of at least three inches in every course. Reinforced lintels are to be used over all openings.

(11) LINTELS:

Straub Reinforced Cinder Concrete Lintels shall be built into the walls over the openings as indicated on the drawings and all lintels shall have a modulus of rupture of not less than 800 pounds per square inch.

(12) PORCH COLUMNS AND PIERS:

Porch columns and piers shall be erected with blocks of such sizes as to conform with the dimensions indicated on the drawings.

Where heavy loads are to be carried on columns and piers they shall be built of solid Straub Units instead of hollow.

(13) CHIMNEY:

All chimneys and fire-places shall be constructed of Straub Cinder Building Units as shown on the drawings, faced with suitable fire brick where exposed to heat.

Provide clay flue linings of the sizes indicated for all chimneys, wiping all joints carefully as the several sections are erected.

(14) CHIMNEY CAP:

Provide Straub Cinder Chimney Cap, pre-cast concrete, stone or brick as indicated on the drawings.

(15) ROOF PLATES:

Build in ¾" anchor bolts as indicated on drawings, five feet on centers, for the fastening of the wooden roof plates, the bolts to project four inches beyond the top of the wall permitting the fastening of the two inch wooden roof plate and the use of a washer and nut. These anchor bolts are to be securely fastened by means of filling the hollow spaces of the blocks around the bolts with cement mortar or concrete.

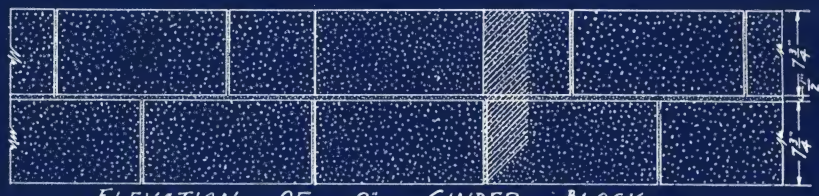
(16) CUTTING AND PATCHING:

This contractor shall do all cutting and patching of his work, and that of other contractors, required for the proper installation of work by other trades, and any necessary cutting and repairing is to be reported to the architect for adjustment with the contractor for whom such work is done. This contractor shall leave all chases and openings required by other trades and build in all anchors, or other accessories furnished by others. All chases and openings that are built or cut into the walls shall, when ready for plastering, be covered with No..... gauge galvanized diamond mesh expanded metal lath or woven wire lath by (this) or (plastering) contractor. Lath to be securely fastened into place lapping the face of the block by at least 2" on each side to prevent cracking of the plaster. Upon completion, do any patching required and remove all rubbish, equipment and surplus material.

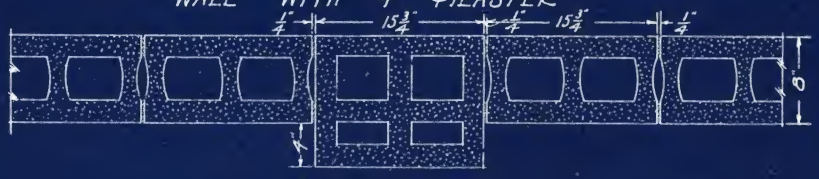
Contractors for plumbing, heating and electric work, and other trades will not be permitted to cut into the block walls without permission from the block masonry contractor and generally any cutting and repairing shall be done by the block mason and the cost charged to the contractor requiring same. Contractors for other trades must therefore arrange the installation of their work so that openings and chases may be built in where required, or furnish to, and co-operate with, the mason contractor in setting the sockets, ferrules, pipings, conduits, outlet boxes and fastenings that must be built into the Hollow Block walls. Horizontal chases will not be permitted in block walls.

WORKING PLANS

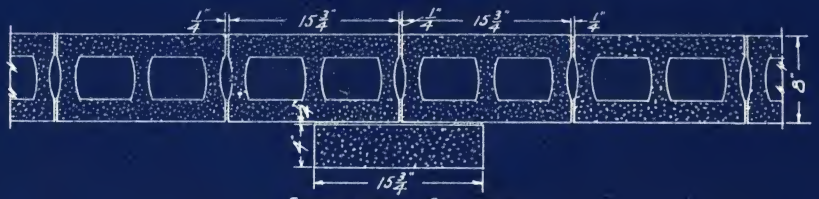
Detail of Bond of 8″ and 12″ Walls with Pilaster



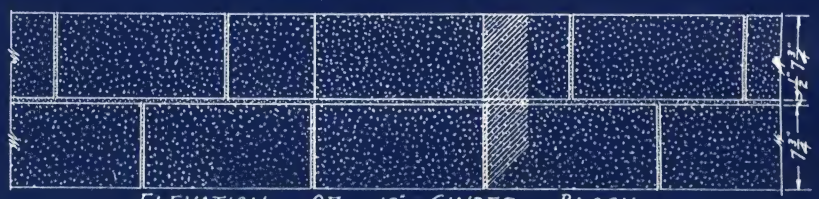
ELEVATION OF 8" CINDER BLOCK WALL WITH 4" PILASTER



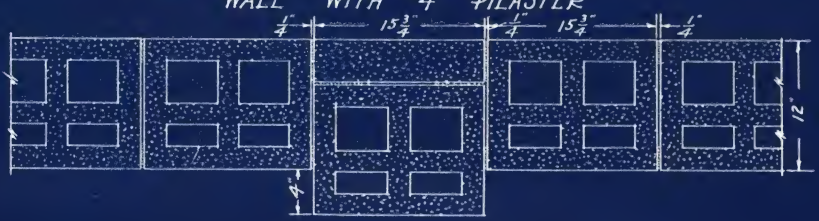
FIRST COURSE



SECOND COURSE



ELEVATION OF 12" CINDER BLOCK WALL WITH 4" PILASTER



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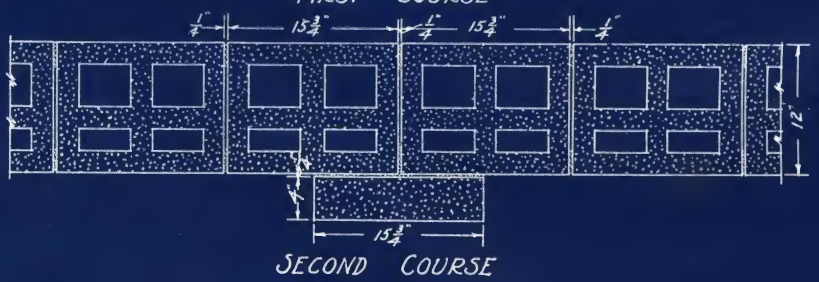

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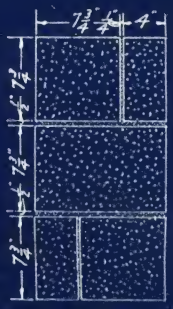
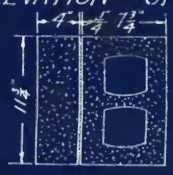


ELEVATION OF PIER



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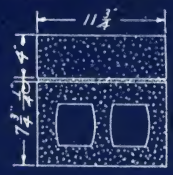

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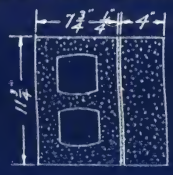
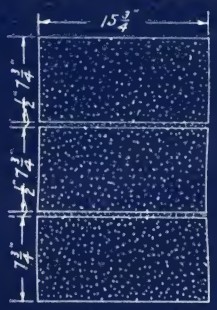
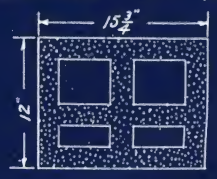


THIRD COURSE

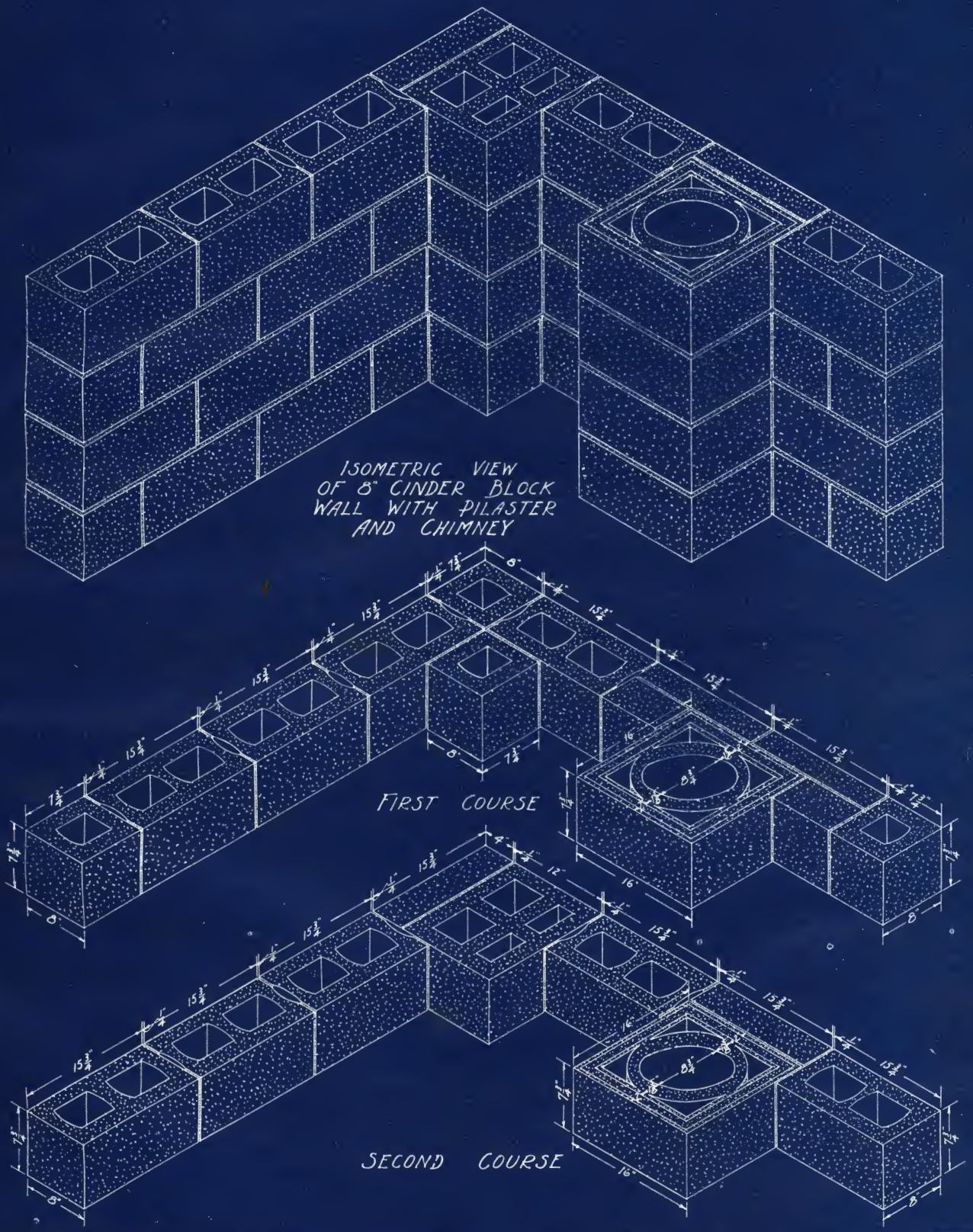


ELEVATION OF PIER

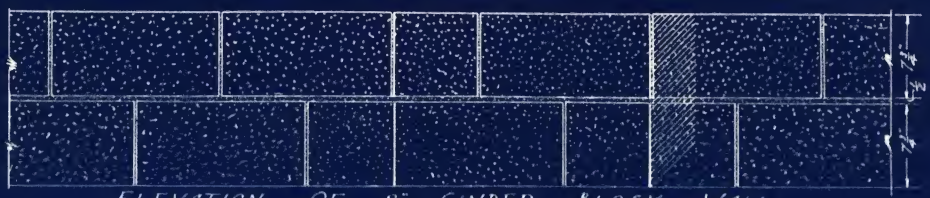


COURSE

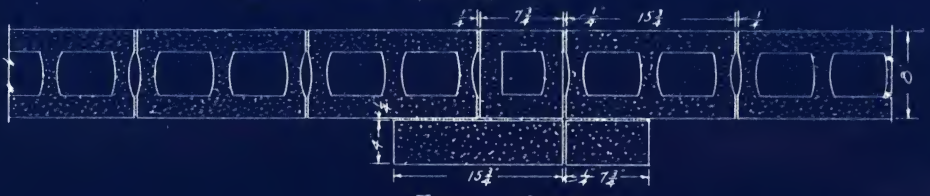
Detail of 8" Block Wall with Pilaster and Chimney



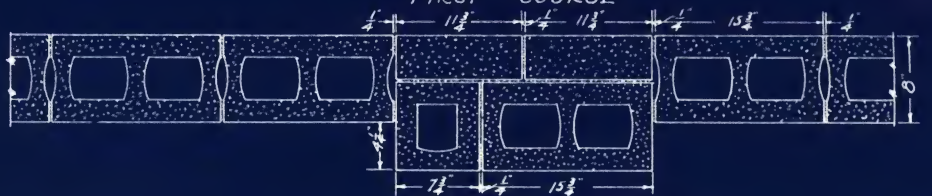
Detail of Pilaster Construction, also Chimney Blocks and Cap



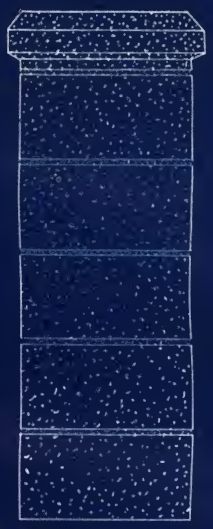
ELEVATION OF 8" CINDER BLOCK WALL WITH 4" PILASTER



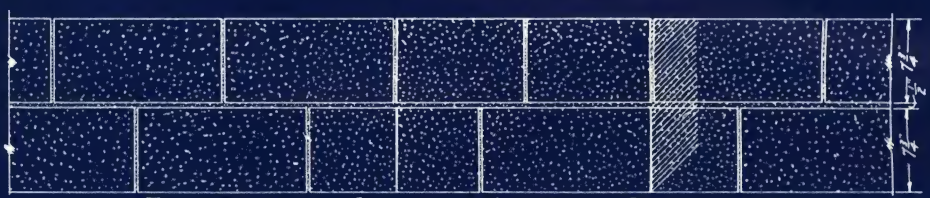
FIRST COURSE



SECOND COURSE



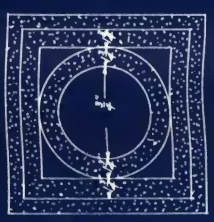
ELEVATION OF CHIMNEY



ELEVATION OF 12" CINDER BLOCK WALL WITH 4" PILASTER

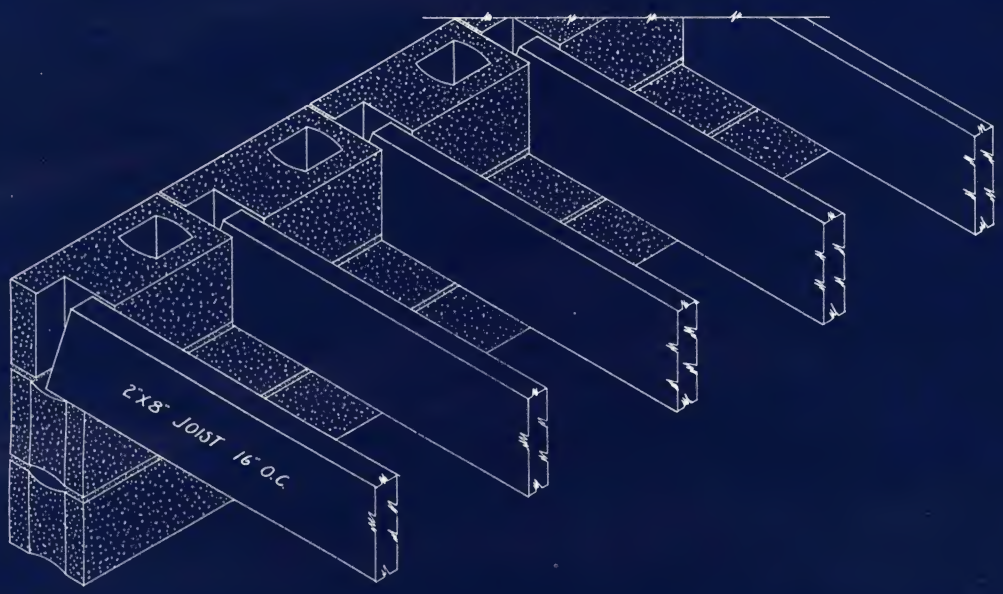
FIRST COURSE

SECOND COURSE

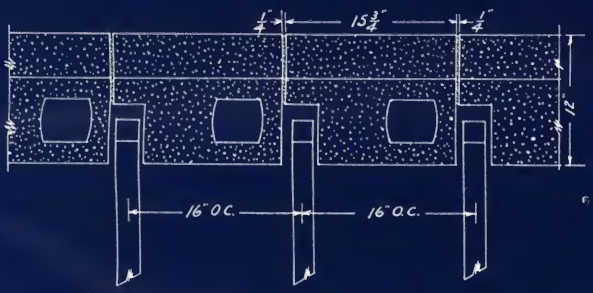


PLAN OF CHIMNEY CAP

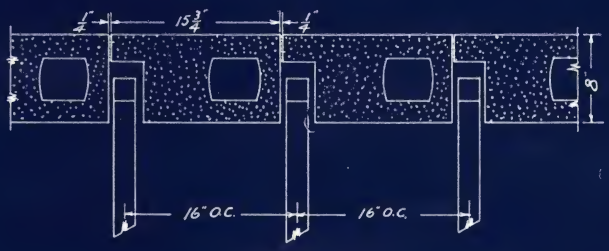
Detail of 8" Joist Construction using Jamb Block



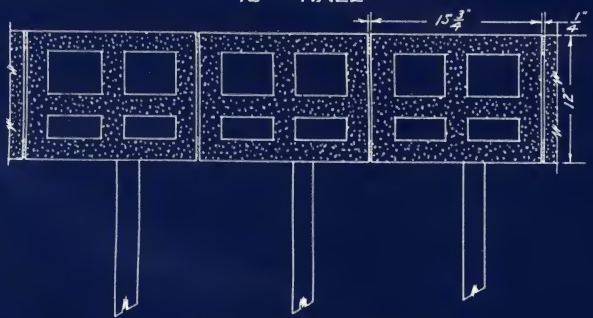
ISOMETRIC VIEW OF SPECIAL JAMB BLOCKS IN RELATION TO WOOD JOIST



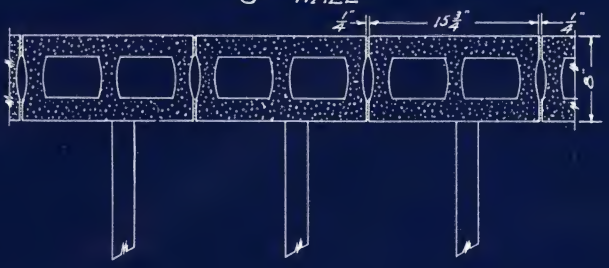
FIRST COURSE PLAN SHOWING JOIST IN 12" WALL



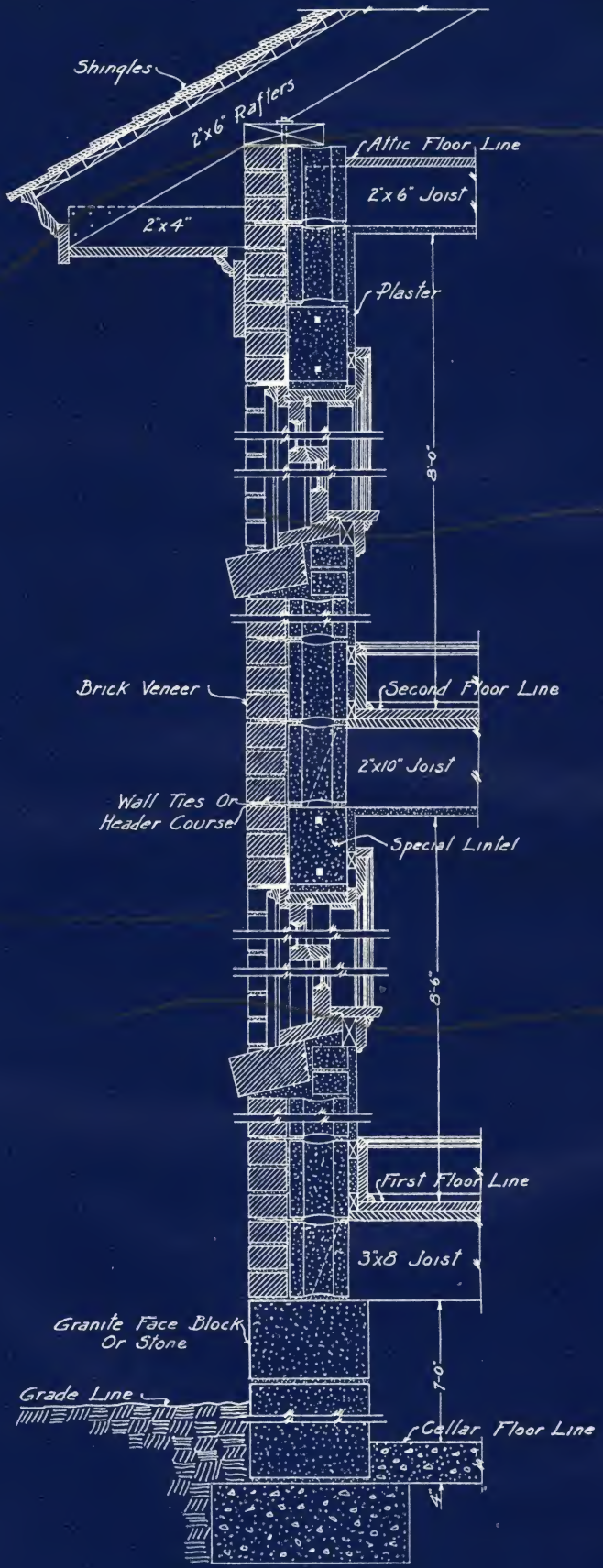
FIRST COURSE PLAN SHOWING JOIST IN 8" WALL



SECOND COURSE

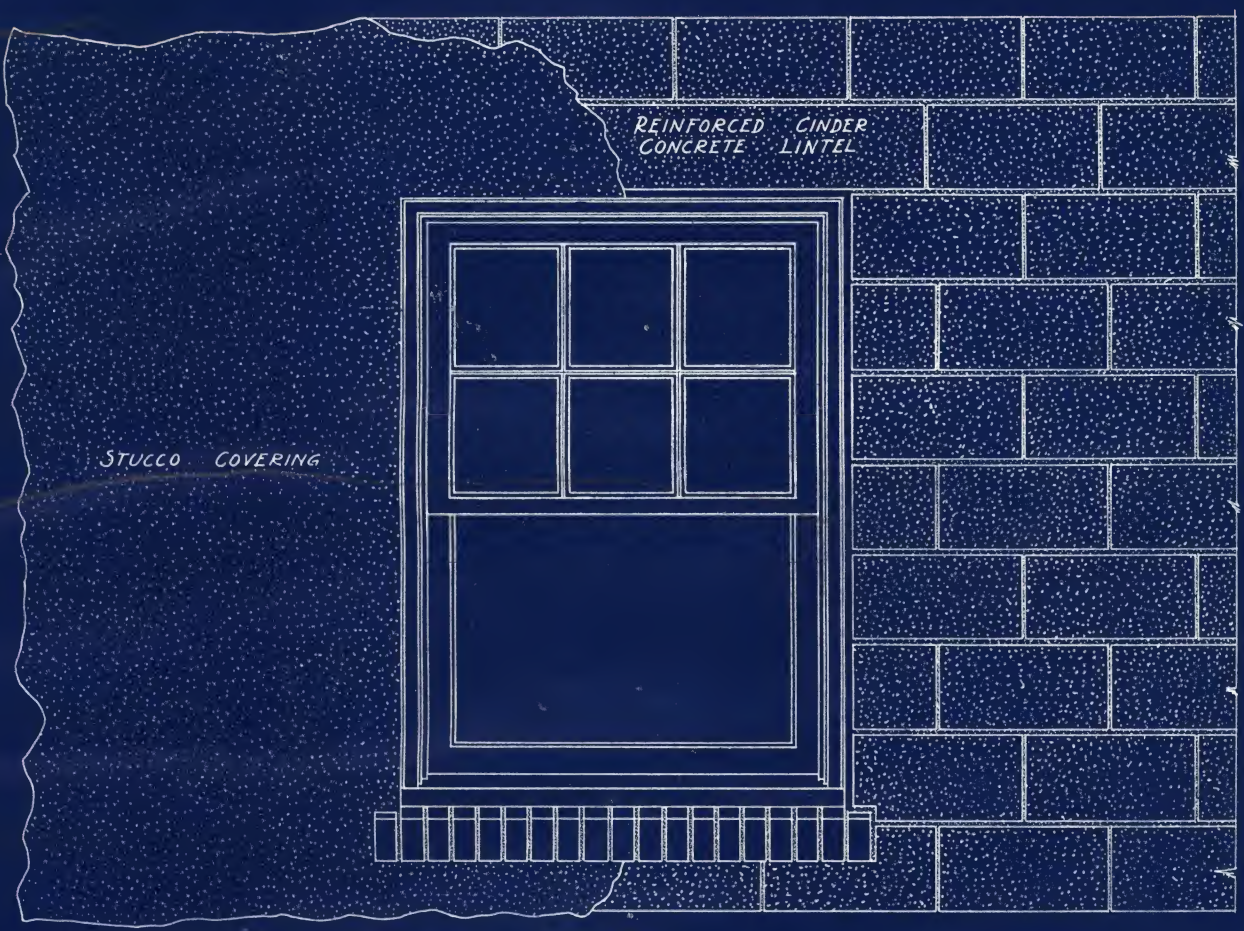


SECOND COURSE



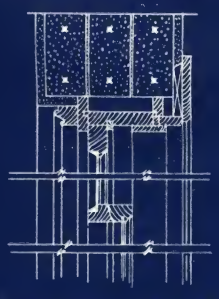
Detail of Wall Sections

Detail of Double Hung Window Construction



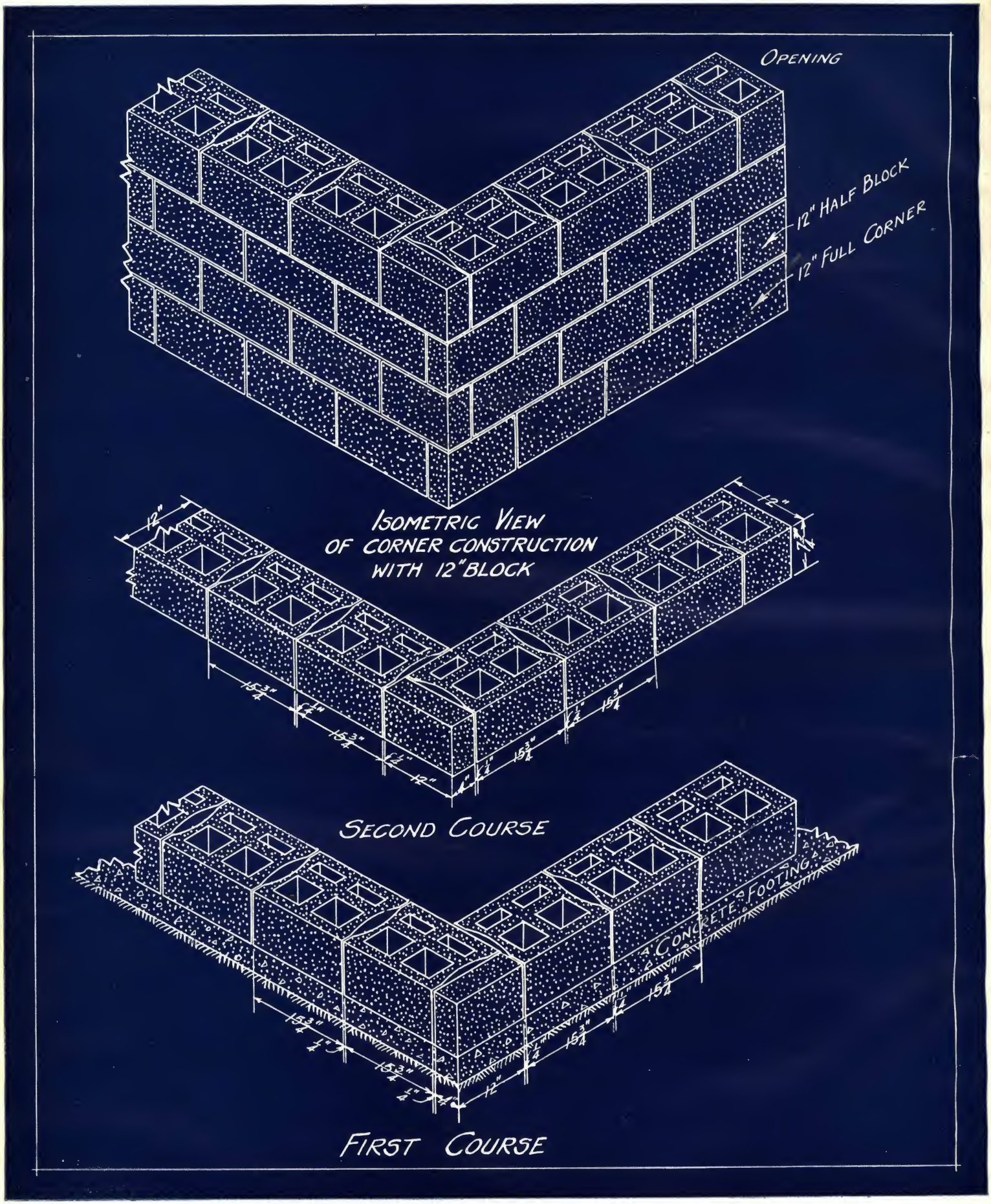
ELEVATION

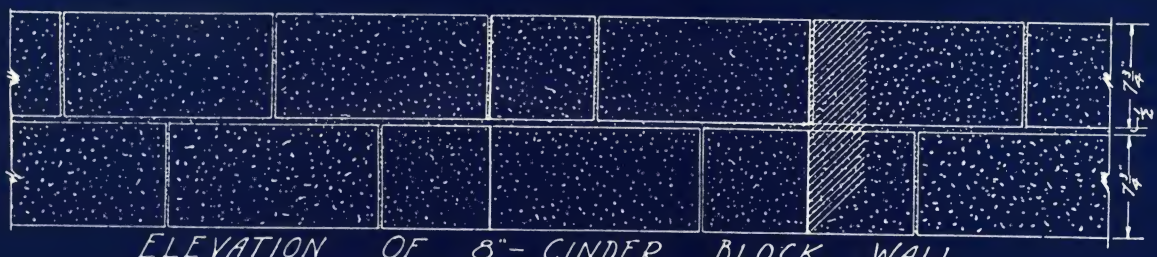
PLAN SHOWING SPECIAL JAMB BLOCKS



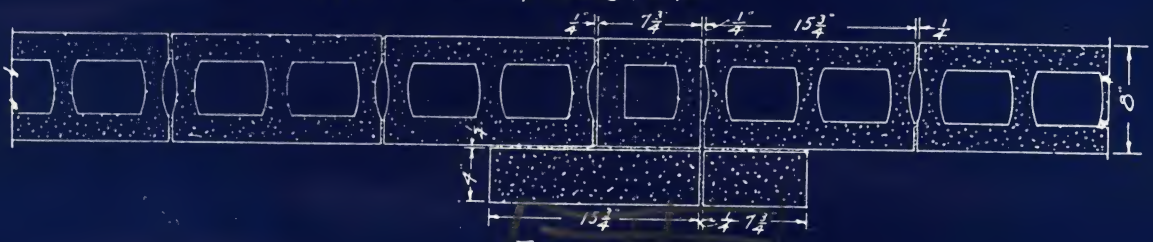
SECTION OF HEAD SHOWING SPECIAL LINTEL

SECTION OF SILL

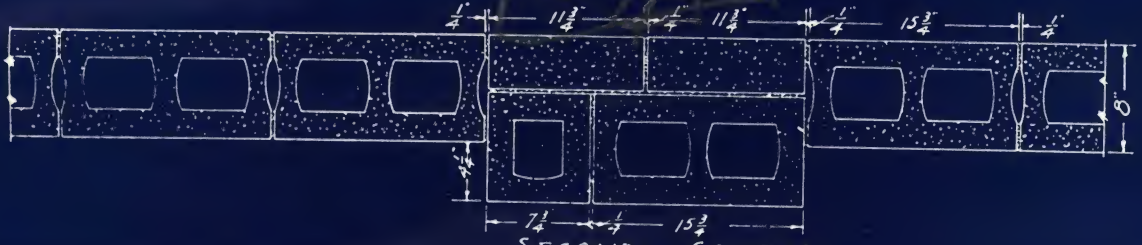

OPENING
12" HALF BLOCK
12" FULL CORNER
ISOMETRIC VIEW
OF CORNER CONSTRUCTION
WITH 12" BLOCK
12"
7 5/8"
15 3/4"
SECOND COURSE
CONCRETE FOOTING
FIRST COURSE



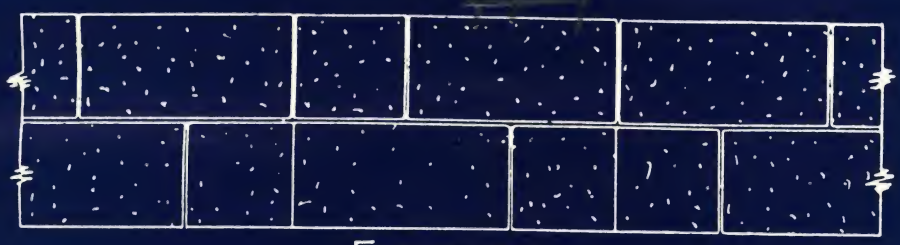
ELEVATION OF 8"- CINDER BLOCK WALL
WITH 4" PILASTER



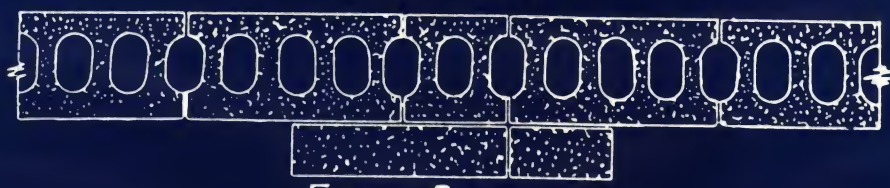
FIRST COURSE



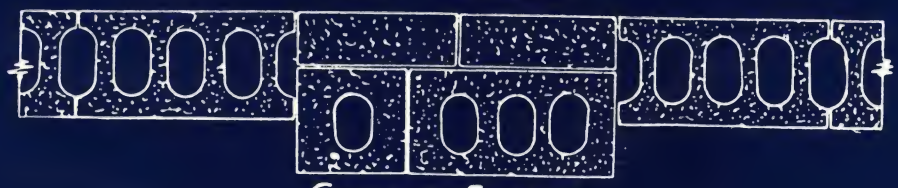
SECOND COURSE



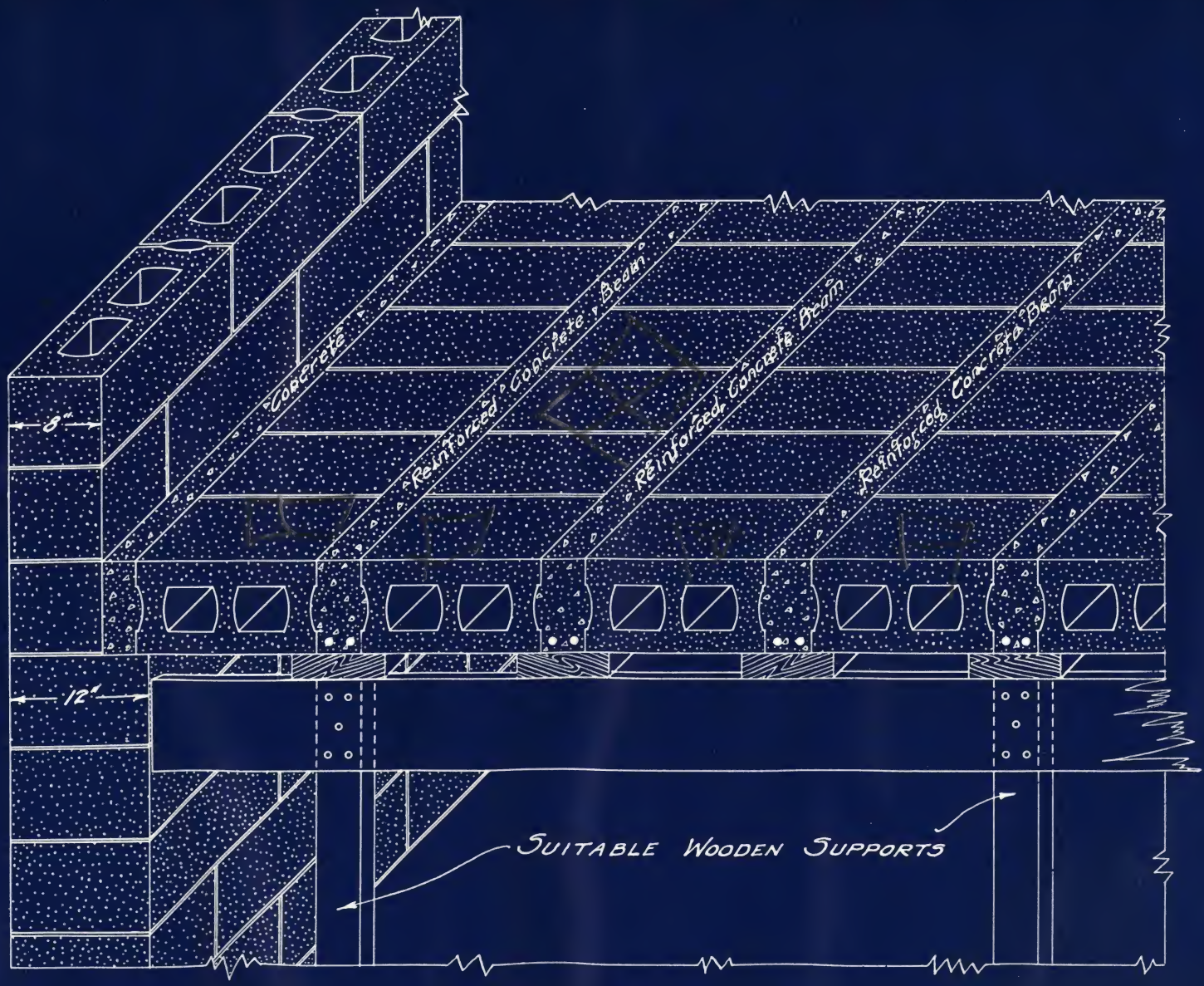
ELEVATION



FIRST COURSE

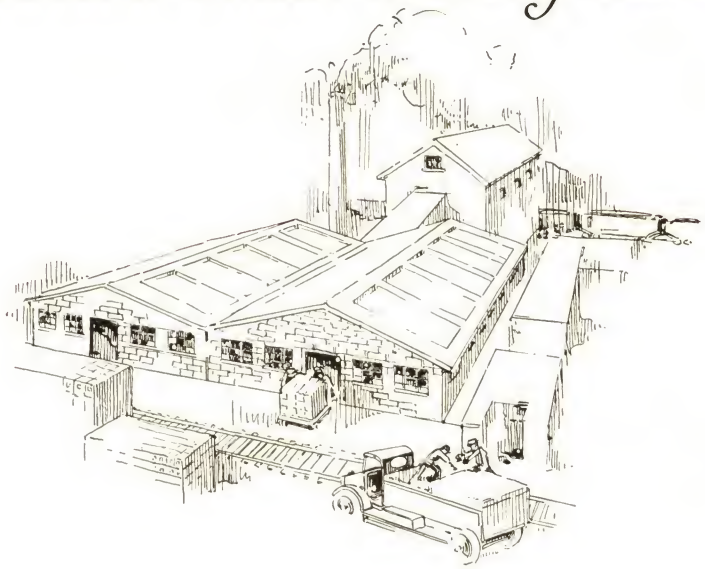


SECOND COURSE



ISOMETRIC VIEW
OF
McILROY FIREPROOF FLOOR SYSTEM
AND
METHOD OF SUPPORTING STRAUB BLOCKS BEFORE PLACING CONCRETE

THE PLANTS MAKING STRAUB *Cinder Building* BLOCKS



LICENSED MANUFACTURERS OF

Straub Cinder Building Block

CINDER BLOCK CORP. OF DELAWARE
13th and Thatcher Streets
Wilmington, Delaware

WASHINGTON CONCRETE PROD. CORP.
Woodward Building
Washington, D. C.

PINKHAM & KILBURN
Palmetto, Florida

ATLAS CINDER BLOCK CORPORATION
29th and Missouri Avenue
East St. Louis, Ill.

MOLINE CAST STONE CO.
48th Street and Fourth Avenue
Moline, Ill.

ILLINOIS CINDER BLOCK CO.
1239 South Circle Avenue
Forest Park, Ill.

STRAUB CINDER BLOCK CO. OF INDIANAPOLIS
585 Century Building
Indianapolis, Indiana

CINDER BLOCK CORPORATION
Kate Avenue and Western Maryland R. R.
Baltimore, Md.

DETROIT CINDER BLOCK & TILE CO.
17201 Newbern Avenue
Detroit, Michigan

FLINT CINDER BLOCK & PRODUCTS CO.
Genesee Bank Building
Flint, Mich.

CINDER BLOCK COMPANY
43rd and Mill Creek Parkway
Kansas City, Mo.

CINDER BLOCK COMPANY OF ST. LOUIS
9000 Olive Street Road
Clayton, Mo.

ST. JOSEPH CINDER BLOCK CO.
St. Joseph, Mo.

IDEAL CEMENT STONE CO.
31st and Spalding Streets
Omaha, Nebraska

BERGEN BUILDING BLOCK CO.
9 Paulison Avenue
Ridgefield Park, New Jersey

CONCRETE SPECIALTIES COMPANY
Mt. Ephraim Ave., North of Grant Ave.
Camden, New Jersey

HUDSON FIREPROOF BLOCK CO.
Homestead
North Bergen, New Jersey

CINDER BRICK & TILE CO.
Van Keuren Avenue
Jersey City, N. J.

CONCRETE SPECIALTIES CO.
Head of Beakes Avenue
Trenton, New Jersey
(P. O. Box 367)

HUDSON FIREPROOF BLOCK CO.
Westfield, N. J.

ELMIRA BUILDING UNITS, INC.
1898 Grand Central Avenue
Elmira, New York

ROCHESTER CINDER BLOCK CORP.
Norman Street
Rochester, N. Y.

JAMESTOWN BLOCK & TILE CO.
Jamestown, N. Y.
P. O. Box 712

CINDER TILE COMPANY, INC.
250 Park Avenue
New York City

STRAUB BUILDING UNITS, INC.
2 Annette Street
Binghampton, N. Y.

PETER KLUG
Youngstown, Ohio

GARLAND BLOCK & SAND CO.
Youngstown, Ohio

SPRINGFIELD CINDER BLOCK CO.
1076 Kenton Street
Springfield, Ohio

CINDER BUILDING BLOCK CO.
Warren, Ohio

YORK PATENTED BUILDING BLOCK CO.
York, Pa.

LANCASTER CONCRETE TILE CO.
228 North Water Street
Lancaster, Pa.

STRAUB BLOCK CO., OF PITTSBURGH
908 Park Building
Pittsburgh, Pa.

WETMORE-HENDERSON LUMBER CO
Warren, Pennsylvania

HOLLYWOOD BUILDING BLOCK CO.
North Plymouth Street
Allentown, Pa.

PHILA. PARTITION & BLDG. BLOCK CO.
28th and Ritner Streets
Philadelphia, Pa.

NEPENNA BUILDING MATERIALS CO.
Kingstown, Pa.

A. DEMBACHER & SONS
Greenville, Pa.

HARRISBURG BUILDING BLOCK CO.
Cameron and Reily Streets
Harrisburg, Pa.

ERIE PATENT BLOCK CO., INC.
Erie, Pa.

POTTSVILLE BUILDING BLOCK CO.
South Centre Street and Schuylkill Haven Pike
Pottsville, Pa.

JUNIATA RECONSTRUCTED STONE CO.
Juniata, Pa.

BERKS BUILDING BLOCK CO.
Northmont
Reading, Pa.

STRAUB BLOCK CO.
Taylor and Mill Streets
New Castle, Pa.

HANKINS-PAULSON CO.
North Beeson Avenue
Uniontown, Pa.

DELVAN BLOCK COMPANY
East Southern Avenue
South Williamsport, Pa.

BUILDING MATERIALS CO.
Greenburg, Pa.

APOLLO STEEL CO.
Apollo, Pa.

BEAVER BUILDING BLOCK CO.
Monaca, Pa.

MR. L. T. SMITH
Mt. Pocono, Pa.

JAMES L. SHREFFLER
Lewistown, Pa.

RICHMOND PATENT BLDG. BLOCK CORP.
P. O. Box 144, West End Station
Richmond, Virginia

NORFOLK BUILDING BLOCK CORP.
Flanders Avenue and Cromwell Road
Fairmount Park
Norfolk, Va.

FAIRMOUNT WALL PLASTER COMPANY
Fairmount, West Virginia
(Fourteen sub-licenses and distributors in West Virginia)

HARTFORD CINDER BLOCK CO.
Hartford, West Va.

CINCRETE, INC.
Clarksburg, West Virginia

CONCRETE PRODUCTS CORPORATION
6022 Plankinton Building
Milwaukee, Wis.

Patents owned by
CROZIER-STRAUB, INC.
120 West 42nd Street
New York City